# DICOM Conformance Statement

*IntelliSpace Cardiovascular R1.1L1*

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**Issued by:**
Philips Healthcare

P.O. Box 10.000
5680 DA Best
The Netherlands

Email: dicom@philips.com
Internet: http://www.healthcare.philips.com/main/about/connectivity

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# 1. DICOM Conformance Statement Overview

IntelliSpace Cardiovascular is the Philips Cardiology multi-modality image and information management solution that allows images, information and reports to be reviewed, stored and distributed throughout the cardiology department and beyond. IntelliSpace Cardiovascular is intended to: a) Review the high quality medical study data provided by modalities, and b) Serve as a permanent archive for such data. As such, the IntelliSpace Cardiovascular system consists of a central image and database server and several connected viewer workspots capable of running various viewer applications (also called review station). The IntelliSpace Cardiovascular is designed with the concerns for the system as: data integrity, performance, image quality, serviceability, and large number of users. Added with ease of use, privacy/confidentiality, flexibility and expandability. Data is imported from the image acquisition system through a vendor provided DICOM port. This port is provided as a safe and reliable way to access the clinical data. In addition to DICOM, IntelliSpace Cardiovascular also maintains compatibility with the installed base of Philips Sonos US image acquisition system in supporting the proprietary DSR-TIFF format. The system also offers DICOM ports such that external systems (viewers, other PACS systems and etc) can access the data. Data can also be imported from and exported to CD or DVD. The primary point of user contact with the system is the viewer workspot, consisting of several clinical tools, e.g. for Cath, Echo, CT and MR, including 3-rd party tools like QLAB. These programs use the common Windows GUI metaphors for selecting items or entering information in the common patient and study search window. A network based on standard technology, connects the IntelliSpace Cardiovascular server, the viewer workspots and external DICOM nodes, such as Cath labs, Ultrasound labs, EP labs and other acquisition systems, DICOM archives, DICOM viewers etc.

MWL SCP and MPPS SCU & SCP is a highly programmable interface engine to connect the IntelliSpace Cardiovascular Image Management System (IMS) and DICOM competent (imaging) modalities to the Hospital Information Systems (HIS) and/or the Cardiology Information System (CIS).
Prime objective of the interface engine is to match the HL7 domain of the hospital information management systems (HIS, CIS, EMR) to the DICOM domain of Imaging modalities, IntelliSpace Cardiovascular Image Management system and its connected (diagnostic) viewing workstations.
MWL SCP and MPPS SCU & SCP supports DICOM Modality Worklist Management (MWLM) as a Service Class provider (SCP) and DICOM Modality Performed Procedure Step (MPPS) both as a Service Class Provider (SCP) and Service Class User (SCU).
The SCU role of MPPS is required to support the IHE requirements on Cardiology workflow. IntelliSpace Cardiovascular Connect, on behalf of IntelliSpace Cardiovascular IMS, may propagate the MPPS data from the DICOM modalities to an IHE compliant Order Filler

system.

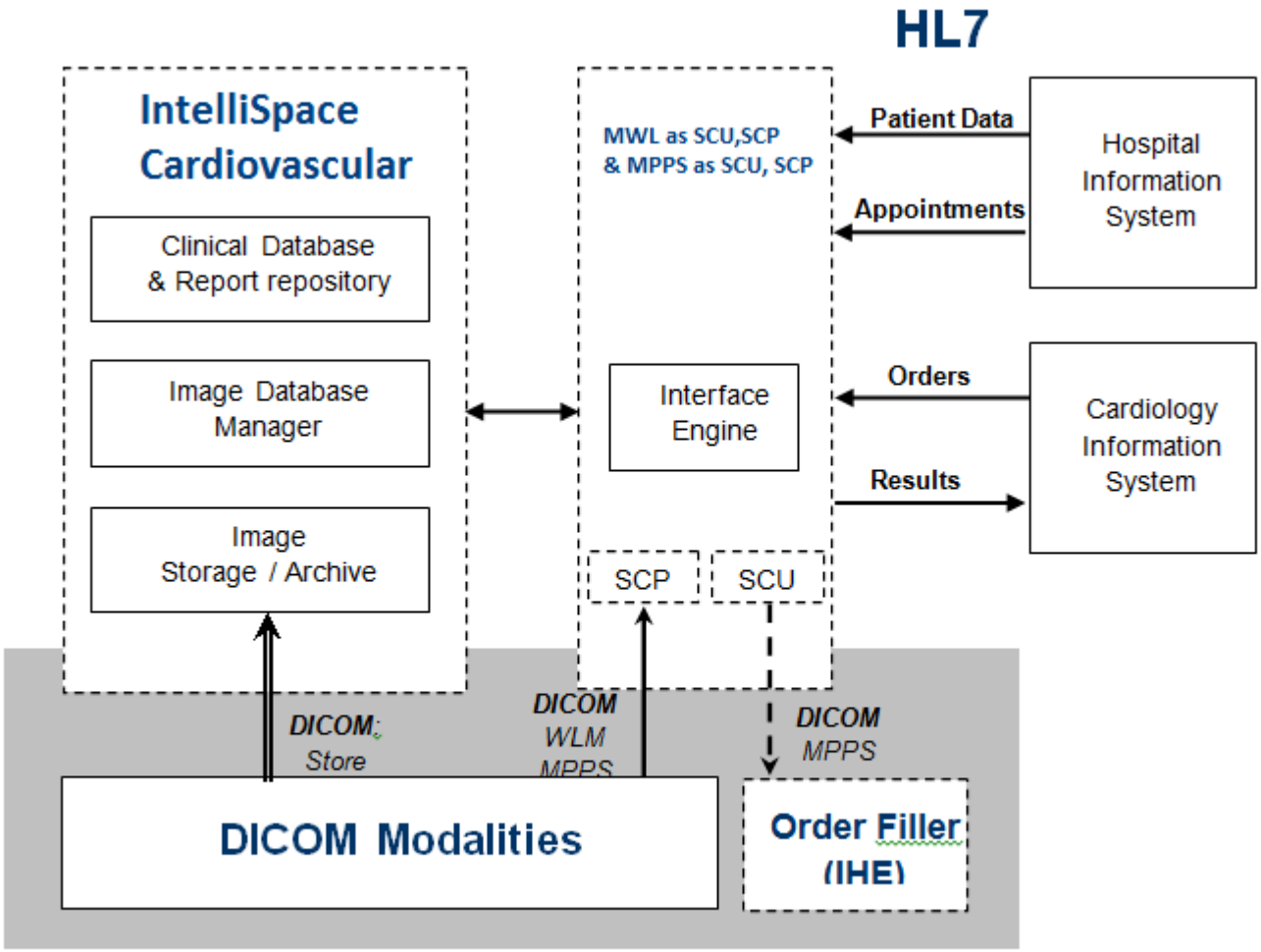


**Figure 1: Position of MWL as SCU,SCP and MPPS as SCU,SCP in the HIS/CIS/EMR & PACS Domain**

**Table 1: Network Services**

| SOP Class | | User of Service (SCU) | Provider of Service (SCP) |
|---|---|---|---|
| **Name** | **UID** | | |
| **Other** | | | |
| Verification SOP Class* | 1.2.840.10008.1.1 | Yes | Yes |
| **Print Management** | | | |
| Print Job SOP Class | 1.2.840.10008.5.1.1.14 | Yes | No |
| Basic Annotation Box SOP Class | 1.2.840.10008.5.1.1.15 | Yes | No |
| Stored Print Storage SOP Class (Retired) | 1.2.840.10008.5.1.1.27 | Yes | No |
| Basic Grayscale Print Management Meta SOP Class | 1.2.840.10008.5.1.1.9 | Yes | No |
| >Basic Film Session SOP Class | 1.2.840.10008.5.1.1.1 | Yes | No |
| >Basic Film Box SOP Class | 1.2.840.10008.5.1.1.2 | Yes | No |

| SOP Class | | User of Service (SCU) | Provider of Service (SCP) |
|---|---|---|---|
| **Name** | **UID** | | |
| >Basic Grayscale Image Box SOP Class | 1.2.840.10008.5.1.1.4 | Yes | No |
| >Printer SOP Class | 1.2.840.10008.5.1.1.16 | Yes | No |
| **Query/Retrieve** | | | |
| Study Root QR Information Model - MOVE SOP Class | 1.2.840.10008.5.1.4.1.2.2.2 | Yes | Yes |
| Patient Root QR Information Model - FIND SOP Class | 1.2.840.10008.5.1.4.1.2.1.1 | No | Yes |
| Study Root QR Information Model - FIND SOP Class | 1.2.840.10008.5.1.4.1.2.2.1 | Yes | Yes |
| PatientStudy Only QR Info. Model - FIND SOP Class (Retired) | 1.2.840.10008.5.1.4.1.2.3.1 | No | Yes |
| Patient Root QR Information Model - MOVE SOP Class | 1.2.840.10008.5.1.4.1.2.1.2 | No | Yes |
| PatientStudy Only QR Info. Model - MOVE SOP Class (Retired) | 1.2.840.10008.5.1.4.1.2.3.2 | No | Yes |
| **Transfer** | | | |
| Hardcopy Grayscale Image Storage (Retired) | 1.2.840.10008.5.1.1.29 | Yes | Yes |
| Hardcopy Color Image Storage (Retired) | 1.2.840.10008.5.1.1.30 | Yes | Yes |
| Computed Radiography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.1 | Yes | Yes |
| Digital X-Ray Image Storage - For Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.1 | Yes | Yes |
| Digital X-Ray Image Storage - For Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.1.1 | Yes | Yes |
| Digital Mammography X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.2 | Yes | Yes |
| Digital Mammography X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.2.1 | Yes | Yes |
| Digital Intra-oral X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.3 | Yes | Yes |
| Digital Intra-oral X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.3.1 | Yes | Yes |
| Standalone Modality LUT Storage (Retired) | 1.2.840.10008.5.1.4.1.1.10 | Yes | Yes |
| Encapsulated PDF Storage | 1.2.840.10008.5.1.4.1.1.104.1 | Yes | Yes |
| Standalone VOI LUT Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.11 | Yes | Yes |
| Grayscale Softcopy Presentation State Storage SOP Class | 1.2.840.10008.5.1.4.1.1.11.1 | Yes | Yes |
| X-Ray Angiographic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.1 | Yes | Yes |
| X-Ray Radiofluoroscopic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.2 | Yes | Yes |
| X-Ray Angiographic Bi-Plane Image Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.12.3 | Yes | Yes |
| Positron Emission Tomography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.128 | Yes | Yes |
| Standalone PET Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.129 | Yes | Yes |
| CT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.2 | Yes | Yes |
| Nuclear Medicine Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.20 | Yes | Yes |
| Ultrasound Multi-frame Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.3 | Yes | Yes |
| Ultrasound Multi-frame Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.3.1 | Yes | Yes |
| MR Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.4 | Yes | Yes |
| RT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.1 | Yes | Yes |
| RT Dose Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.2 | Yes | Yes |
| RT Structure Set Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.3 | Yes | Yes |
| RT Plan Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.5 | Yes | Yes |
| Ultrasound Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.6 | Yes | Yes |
| Ultrasound Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.6.1 | Yes | Yes |
| Raw Data Storage SOP Class | 1.2.840.10008.5.1.4.1.1.66 | Yes | Yes |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 | Yes | Yes |
| Multi-frame Single Bit Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.1 | Yes | Yes |

| SOP Class | | User of Service (SCU) | Provider of Service (SCP) |
|---|---|---|---|
| Name | UID | | |
| Multi-frame Grayscale Byte SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.2 | Yes | Yes |
| Multi-frame Grayscale Word SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.3 | Yes | Yes |
| Multi-frame True Color Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.4 | Yes | Yes |
| Standalone Overlay Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.8 | Yes | Yes |
| Basic Text SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.11 | Yes | Yes |
| Enhanced SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.22 | Yes | Yes |
| Detail SR Storage - Trial (Retired) | 1.2.840.10008.5.1.4.1.1.88.3 | Yes | Yes |
| Comprehensive SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.33 | Yes | Yes |
| X-Ray Radiation Dose SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.67 | Yes | Yes |
| Standalone Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.9 | Yes | Yes |
| 12-lead ECG Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.1.1 | Yes | Yes |
| General ECG Waveform Storage SOP Class | 1.2.840.10008.5.1.4.1.1.9.1.2 | Yes | Yes |
| Philips Private X-Ray Image Storage | 1.3.46.670589.2.3.1.1 | Yes | Yes |
| Philips Private Reconstructed X-ray Storage | 1.3.46.670589.2.4.1.1 | Yes | Yes |
| Philips Private iE33 3D NEO Presentation State Subpage Storage | 1.3.46.670589.2.5.1.1 | Yes | Yes |
| Philips Private ViewForum 3D Volume New Storage | 1.3.46.670589.5.0.1.1 | Yes | Yes |
| Philips Private ViewForum MR Synthetic Image Storage | 1.3.46.670589.5.0.10 | Yes | Yes |
| Philips Private ViewForum MR Cardio Analysis New Storage | 1.3.46.670589.5.0.11.1 | Yes | Yes |
| Philips Private ViewForum CX Synthetic Image Storage | 1.3.46.670589.5.0.12 | Yes | Yes |
| Philips Private ViewForum Perfusion Storage | 1.3.46.670589.5.0.13 | Yes | Yes |
| Philips Private ViewForum Perfusion Analysis Storage | 1.3.46.670589.5.0.14 | Yes | Yes |
| Philips Private ViewForum 3D Volume Object New Storage | 1.3.46.670589.5.0.2.1 | Yes | Yes |
| Philips Private ViewForum Surface New Storage | 1.3.46.670589.5.0.3.1 | Yes | Yes |
| Philips Private ViewForum MR Cardio New Storage | 1.3.46.670589.5.0.8.1 | Yes | Yes |
| Philips Private ViewForum CT Synthetic Image Storage | 1.3.46.670589.5.0.9 | Yes | Yes |
| Color Softcopy Presentation State Storage SOP Class | 1.2.840.10008.5.1.4.1.1.11.2 | Yes | No |
| **Workflow Management** | | | |
| Modality Performed Procedure Step SOP Class | 1.2.840.10008.3.1.2.3.3 | Yes | Yes |
| Modality Worklist Information Model - FIND SOP Class | 1.2.840.10008.5.1.4.31 | Yes | Yes |
| Storage Commitment Push Model SOP Class | 1.2.840.10008.1.20.1 | Yes | Yes |

* Verification SOP Class as SCU is not supported for MWL AE and MPPS AE.

The services can be specified as a SCU, SCP or as an Option, which means that it is either configurable or that it can be purchased separately.

Table 2 shows the Supported Media Storage Application Profiles (with roles).

**Table 2: Media Services**

| Media Storage Application Profile | File-set Creator (FSC) | File-set Updater (FSU) | File-set Reader (FSR) |
|---|---|---|---|
| **Compact Disk-Recordable** | | | |
| 1024 X-Ray Angiographic Studies on CD-R | Yes | No | Yes |

| Media Storage Application Profile | File-set Creator (FSC) | File-set Updater (FSU) | File-set Reader (FSR) |
|---|---|---|---|
| Basic Cardiac X-RAY Angiographic Studies on CD-R | Yes | No | Yes |
| CT/MR Studies on CD-R | Yes | No | Yes |
| General Purpose CD-R Interchange | Yes | No | Yes |
| Image Display (Ultrasound {SF\|MF}) | Yes | No | Yes |
| **DVD** | | | |
| CT/MR Studies on DVD Media | Yes | No | Yes |
| General Purpose DVD Interchange with JPEG | Yes | No | Yes |
| **Magneto-Optical Disk** | | | |
| CT/MR Studies on 1.2GB MOD | No | No | Yes |
| CT/MR Studies on 2.3GB MOD | No | No | Yes |
| CT/MR Studies on 4.1GB MOD | No | No | Yes |
| CT/MR Studies on 650MB MOD | No | No | Yes |
| Image Display (Ultrasound {SF\|MF}) on 1.2GB 130mm MOD | No | No | Yes |
| Image Display (Ultrasound {SF\|MF}) on 128MB MOD | No | No | Yes |
| Image Display (Ultrasound {SF\|MF}) on 2.3GB 130mm MOD | No | No | Yes |
| Image Display (Ultrasound {SF\|MF}) on 230MB 90mm MOD | No | No | Yes |
| Image Display (Ultrasound {SF\|MF}) on 540MB 90mm MOD | No | No | Yes |
| Image Display (Ultrasound {SF\|MF}) on 650MB 130mmMOD | No | No | Yes |

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# 3. Introduction

The introduction specifies product and relevant disclaimers as well as any general information that the vendor feels is appropriate.

## 3.1. Revision History

The revision history provides dates and differences of the different releases.

**Table 3: Revision History**

| Document Version | Date of Issue | Status | Description |
|---|---|---|---|
| 00 | 01-Dec-2014 | Final | Final Version |
| 01 | 22-May-2015 | Corrected | Fault found under number MIT00074480 has been corrected |

## 3.2. Audience

This Conformance Statement is intended for:

- (Potential) customers
- System integrators of medical equipment
- Marketing staff interested in system functionality
- Software designers implementing DICOM interfaces

It is assumed that the reader is familiar with the DICOM standard.

## 3.3. Remarks

The DICOM Conformance Statement is contained in chapter 4 through 8 and follows the contents and structuring requirements of DICOM PS 3.2.
This DICOM Conformance Statement by itself does not guarantee successful interoperability of Philips equipment with non-Philips equipment. The user (or user's agent) should be aware of the following issues:

- **Interoperability**
  Interoperability refers to the ability of application functions, distributed over two or more systems, to work successfully together. The integration of medical devices into an IT environment may require application functions that are not specified within the scope of DICOM. Consequently, using only the information provided by this Conformance Statement does not guarantee interoperability of Philips equipment with non-Philips equipment.
  It is the user's responsibility to analyze thoroughly the application requirements and to specify a solution that integrates Philips equipment with non-Philips equipment.

- **Validation**
  Philips equipment has been carefully tested to assure that the actual implementation of the DICOM interface corresponds with this Conformance Statement.
  Where Philips equipment is linked to non-Philips equipment, the first step is to compare the relevant Conformance Statements. If the Conformance Statements indicate that successful information exchange should be possible, additional validation tests will be necessary to ensure the functionality, performance, accuracy and stability of image and image related data. It is the responsibility of the user (or user's agent) to specify the appropriate test suite and to carry out the additional validation tests.

- **New versions of the DICOM Standard**
  The DICOM Standard will evolve in future to meet the user's growing requirements and to incorporate new features and technologies. Philips is actively involved in this evolution and plans to adapt its equipment to future versions of the DICOM Standard. In order to do so, Philips reserves the right to make changes to its products or to discontinue its delivery. The user should ensure that any non-Philips provider linking to Philips equipment also adapts to future versions of the DICOM Standard. If not, the incorporation of DICOM enhancements into Philips equipment may lead to loss of connectivity (in case of networking) and incompatibility (in case of media).

## 3.4. Definitions, Terms and Abbreviations

**Table 4: Definitions, Terms and Abbreviations**

| Abbreviation/Term | Explanation |
|---|---|
| AE | Application Entity |
| ANSI | American National Standard Institute |
| AP | Application Profile |
| BOT | Basic Offset Table |
| CD | Compact Disc |
| CD-R | CD-Recordable |
| CD-M | CD-Medical |
| CR | Computed Radiography |
| CT | Computed Tomography |
| DCR | Dynamic Cardio Review |
| DICOM | Digital Imaging and Communications in Medicine |
| DIMSE | DICOM Message Service Element |
| DIMSE-C | DIMSE-Composite |
| DIMSE-N | DIMSE-Normalized |
| DVD | Digital Versatile Disc. |
| DX | Digital X-Ray |
| EBE | DICOM Explicit VR Big Endian |
| ELE | DICOM Explicit VR Little Endian |
| FSC | File-set Creator |
| FSR | File-set Reader |
| FSU | File-set Updater |
| GUI | Graphic User Interface |
| HIS | Hospital Information System |
| HL7 | Health Level Seven |
| ILE | DICOM Implicit VR Little Endian |
| IOD | Information Object Definition |
| ISIS | Information System - Imaging System |
| MOD | Magneto-Optical Disk |
| MPPS | Modality Performed Procedure Step |
| MR | Magnetic Resonance |
| MRN | Medical Record Number |
| NEMA | National Electrical Manufacturers Association |
| NM | Nuclear Medicine |
| PDU | Protocol Data Unit |
| PPP | Point-to-Point Protocol |
| RF | X-Ray Radiofluoroscopic |
| RIS | Radiology Information System |
| RT | Radiotherapy |
| RWA | Real-World Activity |
| SC | Secondary Capture |

| Abbreviation/Term | Explanation |
|---|---|
| SCM | Study Component Management |
| SCP | Service Class Provider |
| SCU | Service Class User |
| SOP | Service Object Pair |
| TCP/IP | Transmission Control Protocol/Internet Protocol |
| UID | Unique Identifier |
| US | Ultrasound |
| USMF | Ultrasound Multi-frame |
| WLM | Worklist Management |
| XA | X-Ray Angiographic |

## 3.5. References

[DICOM] Digital Imaging and Communications in Medicine, Parts 1 - 18 (NEMA PS 3.1- PS 3.18),
National Electrical Manufacturers Association (NEMA)
Publication Sales 1300 N. 17th Street, Suite 1752 Rosslyn, Virginia. 22209, United States of America
Internet: http://medical.nema.org/
Note that at any point in time the official standard consists of the most recent yearly edition of the base standard (currently 2013) plus all the supplements and correction items that have been approved as Final Text.

# 4. Networking

This section contains the networking related services (vs. the media related ones).

## 4.1. Implementation model

The implementation model consists of three sections:

- The application data flow diagram, specifying the relationship between the Application Entities and the "external world" or Real-World Activities,
- A functional description of each Application Entity, and
- The sequencing constraints among them.

### 4.1.1. Application Data Flow IntelliSpace Cardiovascular

As part of the implementation model, an application data flow diagram is included. This diagram represents all of the Application Entities present in an implementation, and graphically depicts the relationship of the AE's use of DICOM to Real-World Activities as well as any applicable user interaction.

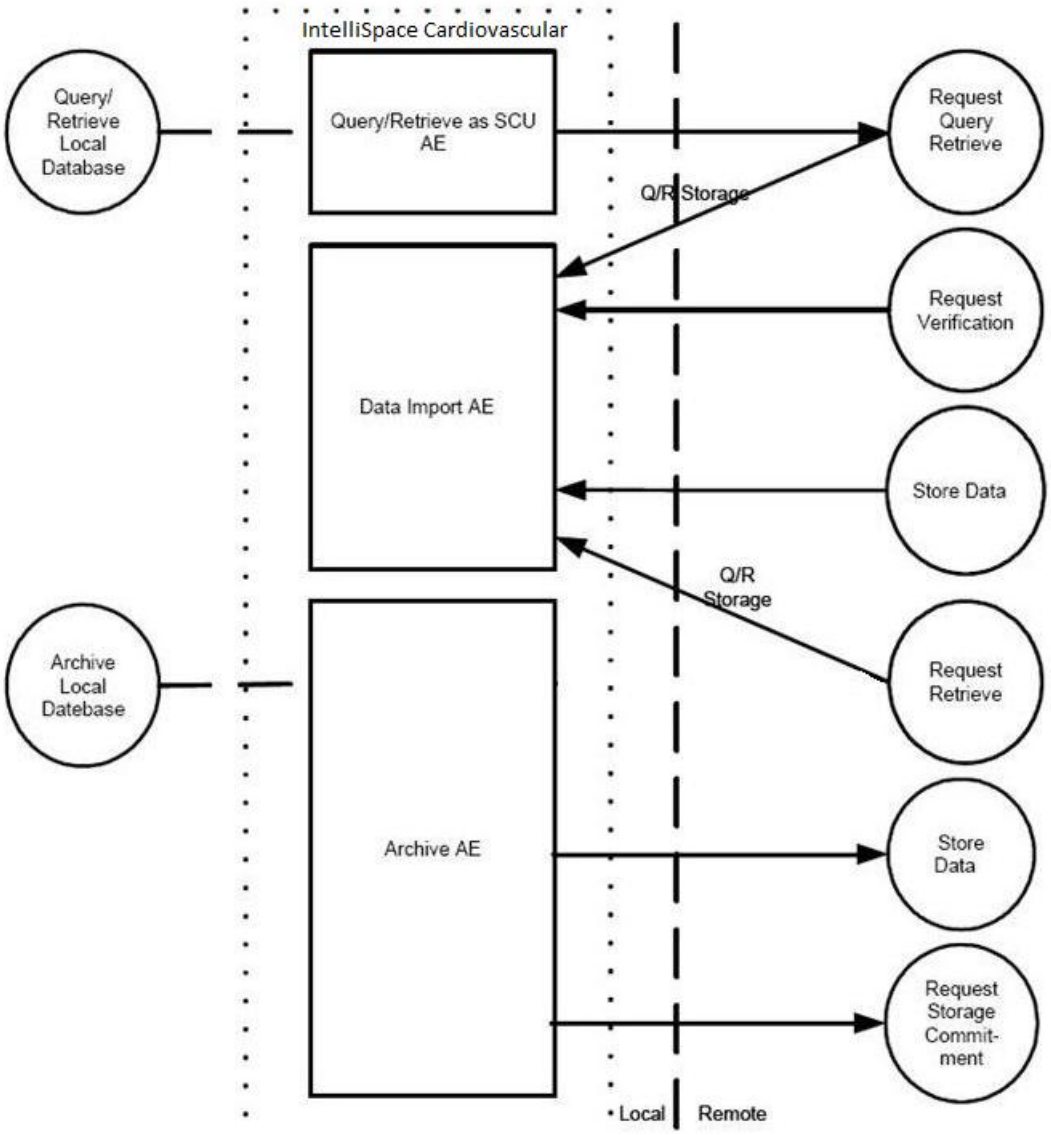


**Figure 2: Application Data Flow Diagram (1)**

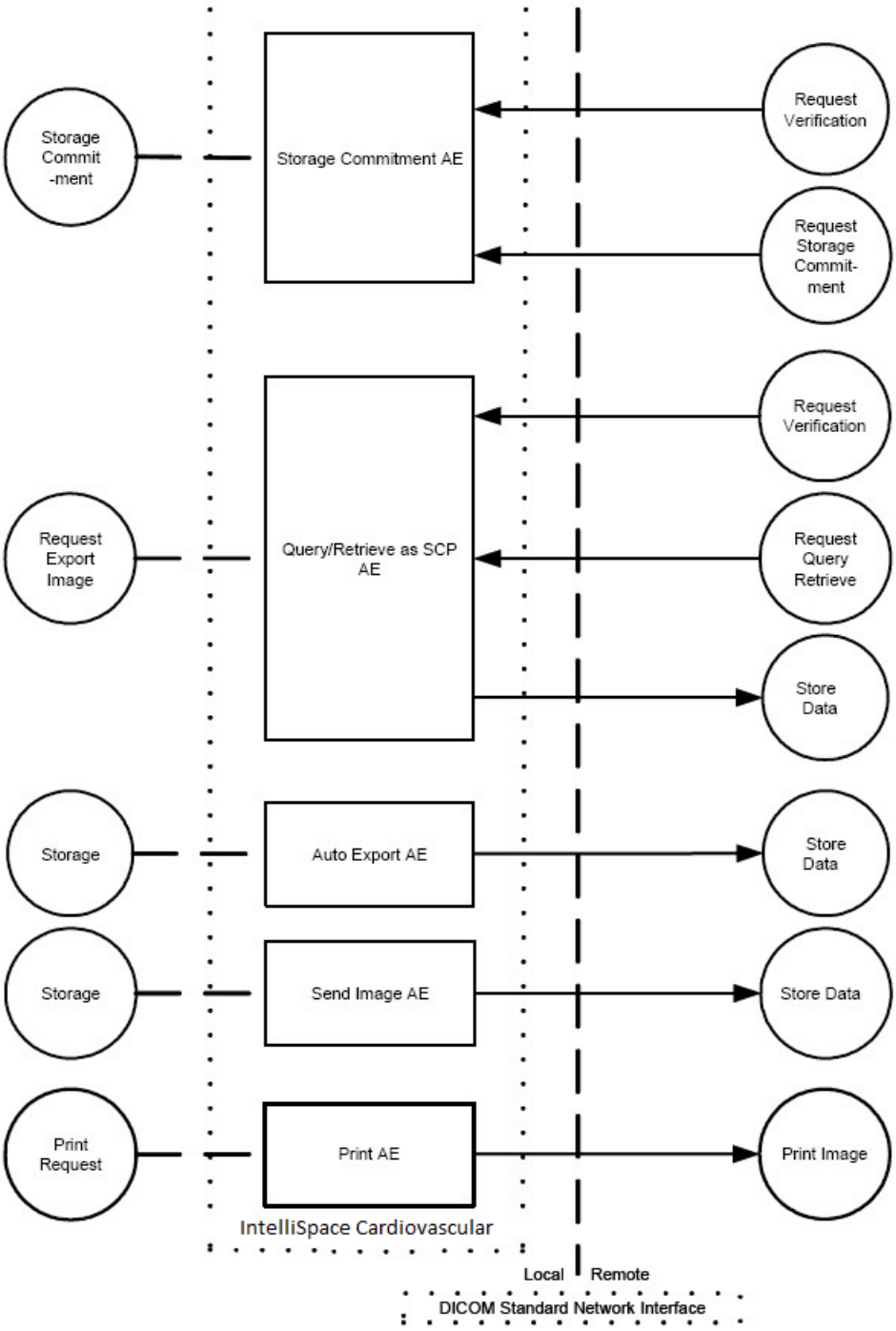


**Figure 3: Application Data Flow Diagram (2)**

## 4.1.2. Application Data Flow MWL SCP and MPPS SCU & SCP

As part of the implementation model, an application data flow diagram is included. This diagram represents all of the Application Entities present in an implementation and graphically depicts the relationship of the AE's use of DICOM to Real-World Activities (RWA) as well as any applicable user interaction.

The related Implementation Model (for a single AE) is shown in Figure below.

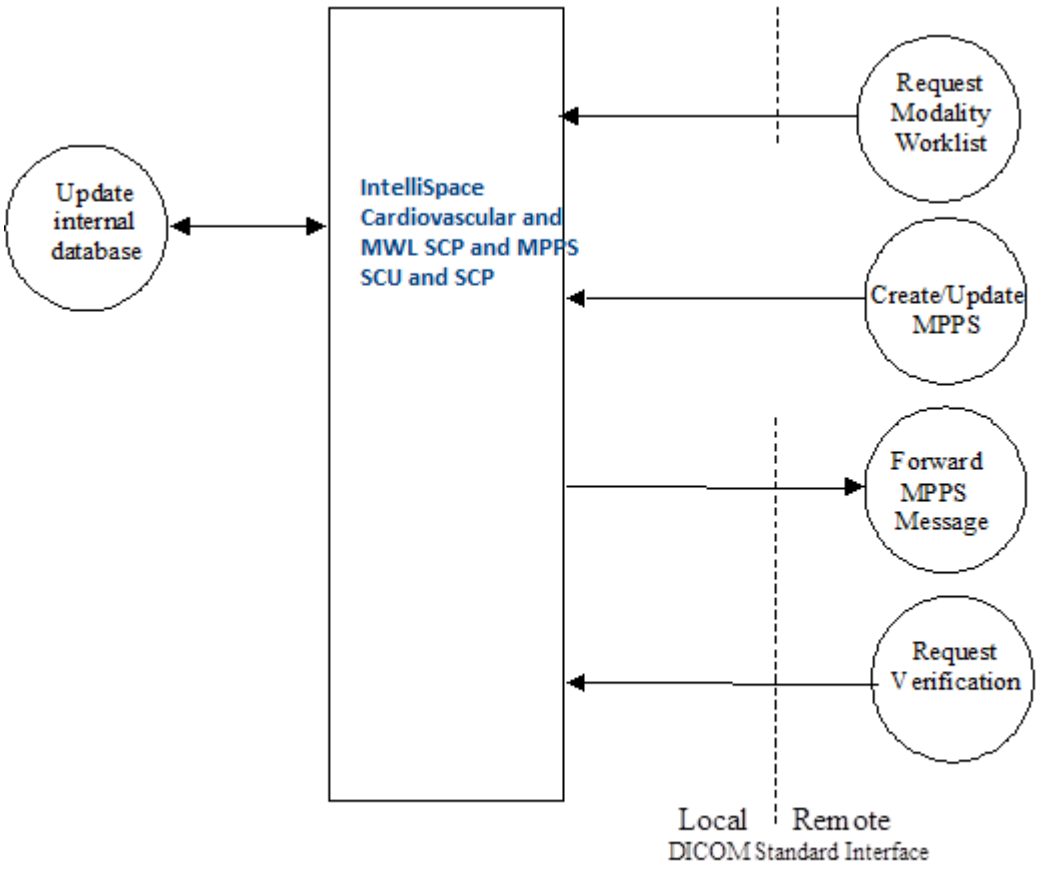


**Figure 4: (Real World) Activity – Application Data flow Diagram**

MWL SCP and MPPS SCU & SCP is able to communicate with modalities according to DICOM. It will accept associations in order to receive requests from modalities for an up-to-date Worklist. The Worklist management application of MWL SCP and MPPS SCU & SCP will interpret the modalities requests, retrieve the requested modality worklist data from its internal database and send the detailed worklist contents to the modalities.
MWL SCP and MPPS SCU & SCP will also accept associations related to start and completion of (performed) procedures (i.e. examinations). The MPPS message will be interpreted by the relevant application in MWL SCP and MPPS SCU & SCP and stored in its internal database.
If required, MWL SCP and MPPS SCU & SCP can receive/queue the MPPS messages from the modalities and forward these to an external, MPPS Manager, acting as a DICOM SCU.

MWL SCP and MPPS SCU & SCP also supports DICOM Verification requests from the remote modalities.

## 4.1.3. Functional Definition of AE's

This section contains a functional definition for each individual local Application Entity.

### 4.1.3.1. Functional Definition of Archive AE

The Archive AE handles the communication between IntelliSpace Cardiovascular and the DICOM Archive. For storing instances to an archive, an automatic function, Storage with Storage Commitment will be used. To pull the instance from an archive, a C-MOVE with Study Instance UID handles this action. The study/instance will be retrieved via the Import AE.

#### 4.1.3.2. Functional Definition of Auto Export AE

IntelliSpace Cardiovascular (SCU) automatically initiates an association with a remote DICOM AE (SCP) to send a storage request and the applicable instance data. (DICOM Storage Service Class)
This Auto export behavior of IntelliSpace Cardiovascular, when configured, happens for all imported studies. It is also possible to auto export only studies from an import AE-Title.

#### 4.1.3.3. Functional Definition of Image Import AE

IntelliSpace Cardiovascular (SCP) accepts an association with a remote DICOM AE (SCU) to receive a storage request and the applicable instance data. (DICOM Storage Service Class)

#### 4.1.3.4. Functional Definition of Print AE

The Print AE in IntelliSpace Cardiovascular supports the functionality for basic grayscale print management, basic annotation box, and print job. On demand, IntelliSpace Cardiovascular (SCU) initiates an association with a printer (SCP) and sends a create requests to the printer (DICOM Print Management SOP class).

#### 4.1.3.5. Functional Definition of Query Retrieve as SCP AE

IntelliSpace Cardiovascular Query/Retrieve as SCP AE consists of two functions. IntelliSpace Cardiovascular (SCP) accepts an association from a remote DICOM AE (SCU) to receive a Query/Retrieve request. (DICOM Query/Retrieve Service Class). - When a retrieve of an instance is requested, IntelliSpace Cardiovascular sends that requested instance through Store SCU AE (DICOM Storage Service Class)

#### 4.1.3.6. Functional Definition of Query Retrieve as SCU AE

IntelliSpace Cardiovascular (SCU) initiates an association on event, initiated by the user, with a remote DICOM AE (SCP) to send a Query/Retrieve request (DICOM Storage Service Class).

#### 4.1.3.7. Functional Definition of Send AE

When the Send function in IntelliSpace Cardiovascular is addressed, IntelliSpace Cardiovascular (SCU) initiates an association on event, initiated by the user, with a remote DICOM AE (SCP) to send a storage request and the applicable instance data. (DICOM Storage Service Class)

#### 4.1.3.8. Functional Definition of Storage Commitment AE

IntelliSpace Cardiovascular (SCP) accepts an association from a remote DICOM AE (SCU) to receive a storage commitment request. After handling the requested storage commitment, IntelliSpace Cardiovascular initiates an association with the SCU to report the status of the storage commitment (DICOM Storage Commitment Service Class)

#### 4.1.3.9. Functional Definition of MWL AE and MPPS AE

MWL SCP and MPPS SCU & SCP implements a DICOM Service Class Provider (SCP) for the Verification, Basic Worklist Management and for the Modality Performed Procedure Step SOP Class. These SCP's entire are contained within a single Application Entity. The same Application Entity can also act as DICOM Service Class Users (SCU) for the Modality Performed Procedure Step SOP Class (MPPS Forwarding).

### 4.1.4. Sequencing of Real World Activities

All Real-World Activities as specified in the Functional Definition of Application Entities may occur independently from each other. MWL SCP and MPPS SCU & SCP does not require any specific sequence of activities.
Modalities are setup in such a way that the requests for MWLM updates are issued at regular intervals. Moreover, the user may press a button on the modality console to refresh the modality worklist instantaneously.
Regarding the MPPS service, the modality has to comply with the normal sequence as defined in the DICOM standard. An MPPS-Created message should be followed by an MPPS-In Progress and/or a MPPS-Completed/Discontinued message type.

## 4.2. AE Specifications

This section in the DICOM Conformance Statement is a set of Application Entity specifications. There are as many of these subsections as there are different AE's in the implementation.

### 4.2.1. Archive AE

Detail of this specific Application Entity is specified in this section.

#### 4.2.1.1. SOP Classes

Archive AE is used for archiving the patient studies either in IntelliSpace Cardiovascular Server (IntelliSpace Cardiovascular DICOM Archive) or in external DICOM Archive.
Archive AE is intended to do the functioning of storing the patient studies in the DICOM Archive, Sending the Storage Commitment to the DICOM Archive and Retrieving studies from the DICOM Archive whenever they are needed. These functions are undertaken automatically.

Archive AE, for its functioning, makes use of following DICOM functions:

- Verification as SCU, which uses C-ECHO service element.
- Image Storage as SCU, which uses C-STORE as service element.
- Storage Commitment as SCU, which uses N-ACTION, N-EVENT-REPORT service elements.
- Retrieve as SCU, which uses C-MOVE as service element.
- Patient / Study are always updates with the latest information in the DICOM Archive. (Refer to the tables in section 4.2.1.3.3.3 for the list of updated patient and study attributes.)

Separate Application Entities need to be configured for Storage, Storage Commitment and Fetch (Retrieve) functionalities.

These DICOM functionalities are described here.

This Application Entity provides Standard Conformance to the following SOP Classes.

**Table 5: SOP Classes for Archive AE**

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Verification SOP Class | 1.2.840.10008.1.1 | Yes | No |
| Storage Commitment Push Model SOP Class | 1.2.840.10008.1.20.1 | Yes | No |
| Hardcopy Grayscale Image Storage (Retired) | 1.2.840.10008.5.1.1.29 | Yes | Yes |
| Hardcopy Color Image Storage (Retired) | 1.2.840.10008.5.1.1.30 | Yes | Yes |
| Computed Radiography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.1 | Yes | Yes |
| Digital X-Ray Image Storage - For Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.1 | Yes | Yes |
| Digital X-Ray Image Storage - For Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.1.1 | Yes | Yes |
| Digital Mammography X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.2 | Yes | Yes |
| Digital Mammography X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.2.1 | Yes | Yes |
| Digital Intra-oral X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.3 | Yes | Yes |
| Digital Intra-oral X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.3.1 | Yes | Yes |
| Standalone Modality LUT Storage (Retired) | 1.2.840.10008.5.1.4.1.1.10 | Yes | Yes |
| Encapsulated PDF Storage | 1.2.840.10008.5.1.4.1.1.104.1 | Yes | Yes |
| Standalone VOI LUT Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.11 | Yes | Yes |
| Grayscale Softcopy Presentation State Storage SOP Class | 1.2.840.10008.5.1.4.1.1.11.1 | Yes | Yes |
| X-Ray Angiographic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.1 | Yes | Yes |
| X-Ray Radiofluoroscopic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.2 | Yes | Yes |

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| X-Ray Angiographic Bi-Plane Image Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.12.3 | Yes | Yes |
| Positron Emission Tomography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.128 | Yes | Yes |
| Standalone PET Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.129 | Yes | Yes |
| CT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.2 | Yes | Yes |
| Nuclear Medicine Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.20 | Yes | Yes |
| Ultrasound Multi-frame Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.3 | Yes | Yes |
| Ultrasound Multi-frame Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.3.1 | Yes | Yes |
| MR Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.4 | Yes | Yes |
| RT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.1 | Yes | Yes |
| RT Dose Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.2 | Yes | Yes |
| RT Structure Set Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.3 | Yes | Yes |
| RT Plan Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.5 | Yes | Yes |
| Ultrasound Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.6 | Yes | Yes |
| Ultrasound Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.6.1 | Yes | Yes |
| Raw Data Storage SOP Class | 1.2.840.10008.5.1.4.1.1.66 | Yes | Yes |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 | Yes | Yes |
| Multi-frame Single Bit Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.1 | Yes | Yes |
| Multi-frame Grayscale Byte SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.2 | Yes | Yes |
| Multi-frame Grayscale Word SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.3 | Yes | Yes |
| Multi-frame True Color Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.4 | Yes | Yes |
| Standalone Overlay Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.8 | Yes | Yes |
| Basic Text SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.11 | Yes | Yes |
| Enhanced SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.22 | Yes | Yes |
| Detail SR Storage - Trial (Retired) | 1.2.840.10008.5.1.4.1.1.88.3 | Yes | Yes |
| Comprehensive SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.33 | Yes | Yes |
| X-Ray Radiation Dose SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.67 | Yes | Yes |
| Standalone Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.9 | Yes | Yes |
| General ECG Waveform Storage SOP Class | 1.2.840.10008.5.1.4.1.1.9.1.2 | Yes | Yes |
| Study Root QR Information Model - MOVE SOP Class | 1.2.840.10008.5.1.4.1.2.2.2 | Yes | No |
| Philips Private X-Ray Image Storage | 1.3.46.670589.2.3.1.1 | Yes | Yes |
| Philips Private Reconstructed X-ray Storage | 1.3.46.670589.2.4.1.1 | Yes | Yes |
| Philips Private iE33 3D NEO Presentation State Subpage Storage | 1.3.46.670589.2.5.1.1 | Yes | Yes |
| Philips Private ViewForum 3D Volume New Storage | 1.3.46.670589.5.0.1.1 | Yes | Yes |
| Philips Private ViewForum MR Synthetic Image Storage | 1.3.46.670589.5.0.10 | Yes | Yes |
| Philips Private ViewForum MR Cardio Analysis New Storage | 1.3.46.670589.5.0.11.1 | Yes | Yes |
| Philips Private ViewForum CX Synthetic Image Storage | 1.3.46.670589.5.0.12 | Yes | Yes |
| Philips Private ViewForum Perfusion Storage | 1.3.46.670589.5.0.13 | Yes | Yes |
| Philips Private ViewForum Perfusion Analysis Storage | 1.3.46.670589.5.0.14 | Yes | Yes |
| Philips Private ViewForum 3D Volume Object New Storage | 1.3.46.670589.5.0.2.1 | Yes | Yes |
| Philips Private ViewForum Surface New Storage | 1.3.46.670589.5.0.3.1 | Yes | Yes |
| Philips Private ViewForum MR Cardio New Storage | 1.3.46.670589.5.0.8.1 | Yes | Yes |
| Philips Private ViewForum CT Synthetic Image Storage | 1.3.46.670589.5.0.9 | Yes | Yes |

Note: Any SOP class specific behavior is documented later in this conformance statement in the applicable SOP class specific conformance section.

#### 4.2.1.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

##### 4.2.1.2.1. General

The DICOM standard application context is specified below.

**Table 6: DICOM Application Context**

| Description | Value |
|---|---|
| Application Context Name | 1.2.840.10008.3.1.1.1 |

##### 4.2.1.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as an Initiator or Acceptor is specified here.

**Table 7: Number of associations as an Association Initiator for this AE**

| Description | Value |
|---|---|
| Maximum number of simultaneous associations | 1 |

##### 4.2.1.2.3. Asynchronous Nature

The implementation supports negotiation of multiple outstanding transactions, along with the maximum number of outstanding transactions supported.

**Table 8: Asynchronous nature as an Association Initiator for this AE**

| Description | Value |
|---|---|
| Maximum number of outstanding asynchronous transactions | Unlimited |

##### 4.2.1.2.4. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

**Table 9: DICOM Implementation Class and Version for Archive AE**

| | |
|---|---|
| Implementation Class UID | 1.3.46.670589.16.14.4.1.1 |
| Implementation Version Name | ISCV R1.1.L1 |

##### 4.2.1.2.5. Communication Failure Handling

The behavior of the AE during communication failure is summarized in the next table.

**Table 10: Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| ARTIM Timeout | The association is closed and the reason is logged. |

#### 4.2.1.3. Association Initiation Policy

The Application Entity will respond on a received reject Association attempt as shown in next table.

**Table 11: Association Rejection response**

| Result | Source | Reason/Diagnosis | Explanation |
|---|---|---|---|
| 1 - rejected-permanent | 1 - DICOM UL service-user | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - application-context-name-not supported | The user is informed. Details are logged in central log file. |
| | | 3 - calling-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | | 7 - called-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | 2 - DICOM UL service-provider (ACSE related function) | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - protocol-version-not-supported | The user is informed. Details are logged in central log file. |
| | 3 - DICOM UL service-provider (Presentation related function) | 1 - temporary-congestion | The user is informed. Details are logged in central log file. |
| | | 2 - local-limit-exceeded | The user is informed. Details are logged in central log file. |
| 2 - rejected-transient | 1 - DICOM UL service-user | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - application-context-name-not-supported | The user is informed. Details are logged in central log file. |
| | | 3 - calling-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | | 7 - called-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | 2 - DICOM UL service-provider (ACSE related function) | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - protocol-version-not-supported | The user is informed. Details are logged in central log file. |
| | 3 - DICOM UL service-provider (Presentation related function) | 1 - temporary-congestion | The user is informed. Details are logged in central log file. |
| | | 2 - local-limit-exceeded | The user is informed. Details are logged in central log file. |

The behavior of the AE on receiving an association abort is summarized in the next table.

**Table 12: Association Abort Handling**

| Source | Reason/Diagnosis | Behavior |
|---|---|---|
| 0 - DICOM UL service-user (initiated abort) | 0 - reason-not-specified | When received, terminates the connection and logs the event. |
| 2 - DICOM UL service-provider (initiated abort) | 0 - reason-not-specified | When received, terminates the connection and logs the event. |
| | 1 - unrecognized-PDU | When received, terminates the connection and logs the event. |
| | 2 - unexpected-PDU | When received, terminates the connection and logs the event. |
| | 4 - unrecognized-PDU-parameter | When received, terminates the connection and logs the event. |
| | 5 - unexpected-PDU-parameter | When received, terminates the connection and logs the event. |

| Source | Reason/Diagnosis | Behavior |
|---|---|---|
| | 6 - invalid-PDU-parameter-value | When received, terminates the connection and logs the event. |

#### 4.2.1.3.1. (Real-World) Activity – Verification as SCU

##### 4.2.1.3.1.1. Description and Sequencing of Activities

The Archive AE sends associations to systems to verify application level communication using the C-ECHO command.

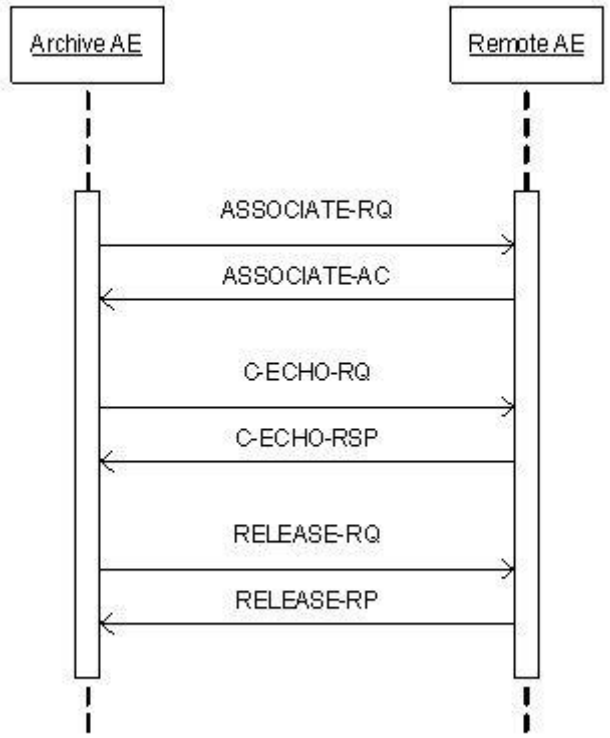


**Figure 5: (Real World) Activity - Verification as SCU**

##### 4.2.1.3.1.2. Proposed Presentation Contexts

The Archive AE proposes the following presentation contexts to the remote AE during the association request before sending the C-ECHO.

**Table 13: Proposed Presentation Contexts for (Real-World) Activity – Verification as SCU**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Verification SOP Class | 1.2.840.10008.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

#### 4.2.1.3.1.3. SOP Specific Conformance for Verification SOP Class

The Archive AE provides standard conformance to Verification SOP Class.

##### 4.2.1.3.1.3.1. Dataset Specific Conformance for Verification C-ECHO SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 14: Status Response**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Confirmation | the SCU has successfully send C-ECHO |
| Other than success | <>0000 | Problems with sending the C-ECHO | Reason is logged |

### 4.2.1.3.2. (Real-World) Activity – MOVE as SCU

#### 4.2.1.3.2.1. Description and Sequencing of Activities

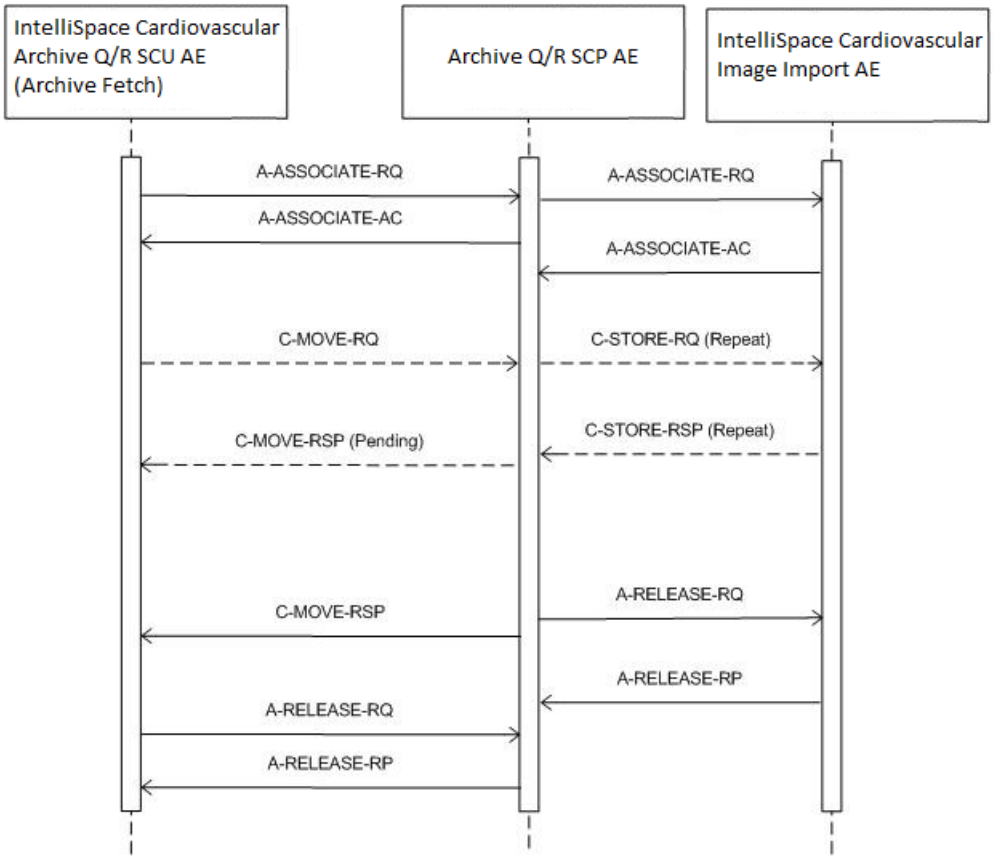


**Figure 6: (Real World) Activity - MOVE As SCU (Archive Fetch)**

Steps in fetch from DICOM Archive:

1. Send a DICOM C-MOVE (using Study UID from the database as identifier) request to the DICOM archive for each study to be

fetched.
2. In response to the C-MOVE, DICOM Archive performs a C-STORE to IntelliSpace Cardiovascular data Import AE.

#### 4.2.1.3.2.2. Proposed Presentation Contexts

The presentation contexts proposed by Archive QR SCU AE for (Real-World) Activity – C-MOVE are defined in next table.

**Table 15: Proposed Presentation Contexts for (Real-World) Activity – MOVE As SCU**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Study Root QR Information Model - MOVE SOP Class | 1.2.840.10008.5.1.4.1.2.2.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

#### 4.2.1.3.2.3. SOP Specific Conformance for Study Root QR Information Model - MOVE SOP Class

Only Study level queries are supported.

The Archive QR SCU AE supports queries based on the combination of the following (Study level) attributes and attribute matching types (as defined in [DICOM] PS 3.4).

**Exceptions:**
1. If after setting up the connection and sending the move request, if no data is received from the external DICOM node before a (user configurable) time out has passed; the QR SCU AE aborts the connection.
2. If an error occurs on the external DICOM node while setting up the connection, the QR SCU AE will abort all actions related to the connection and report errors.
3. If no agreement between the two parties can be reached concerning communication parameters the connection will be closed and no query communications will take place.
4. If an error occurs on the DICOM Archive server during query communications, the DICOM Archive server will abort the connection.

##### 4.2.1.3.2.3.1. Dataset Specific Conformance for Study Root QR Information Model - MOVE SOP Class C-MOVE-SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

**Table 16: Identifiers for MOVE Study Root Information Model as SCU**

| Study Root Information Model | | | |
|---|---|---|---|
| Attribute Name | Tag | VR | Comment |
| Query/Retrieve Level | 0008,0052 | CS | - |
| Q/R Study level | | | |
| Study Instance UID | 0020,000D | UI | Universal Matching. |

C-MOVE-SCU acts on the possible Status Responses with are shown in the next Table.

**Table 17: DICOM Command response status handling behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Sub-operations complete – No failures | The Retrieve job is marked as Completed at the queue manager. The association is released. |
| Failed | A900 | Identifier does not match SOP class | The Retrieve job is marked as Failed at the queue manager. The association is released. The reason is logged. |

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| | Cxxx | Unable to process | The Retrieve job is marked as Failed at the queue manager. The association is released. The reason is logged. |
| Refused | A701 | Out of resources – Unable to calculate number of matches | The Retrieve job is marked as Failed at the queue manager. The association is released. The reason is logged. |
| | A702 | Out of resources – Unable to perform sub-operations | The Retrieve job is marked as Failed at the queue manager. The association is released. The reason is logged. |
| | A801 | Destination unknown | The Retrieve job is marked as Failed at the queue manager. The association is released. The reason is logged. |
| Pending | FF00 | Sub-operations are continuing | The Retrieve job continues. |
| Warning | B000 | Sub-operations complete – One or more failures | The Retrieve job is marked as Completed at the queue manager. The association is released. The reason is logged. |
| Cancel | FE00 | Sub-operations terminated due to Cancel indication | The Retrieve job is marked as Failed at the queue manager. The association is released. The reason is logged. |
| | When no status match | | The Retrieve job is marked as Failed at the queue manager. The association is released. The reason is logged. |

The possible Communication Failures are listed here.

**Table 18: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| Reply Time-out | The job fails and the association is aborted. The reason is logged and reported to the user. |
| Association Time-out SCU | N/A |
| Association Aborted | The job fails. The reason is logged and reported to the user. |

#### 4.2.1.3.3. (Real-World) Activity – Image Export

##### 4.2.1.3.3.1. Description and Sequencing of Activities

In this chapter the Export of Instance (Archive Storage SCU) behavior of the IntelliSpace Cardiovascular will be described.

**Normal flow of events for Image Export (Archive Storage SCU):**
1. When the condition for Archiving of study/studies is met (based on the Archive Configuration settings); IntelliSpace Cardiovascular sets up a store connection and negotiates communication parameters with this Archive DICOM node. Connection setup is executed according to DICOM Store protocols, with IntelliSpace Cardiovascular acting as DICOM Store SCU.
2. After this connection is setup, IntelliSpace Cardiovascular send study/studies to the external DICOM node. Upon completion of this, the connection is closed. Start and end of the connection and data transfer are logged.

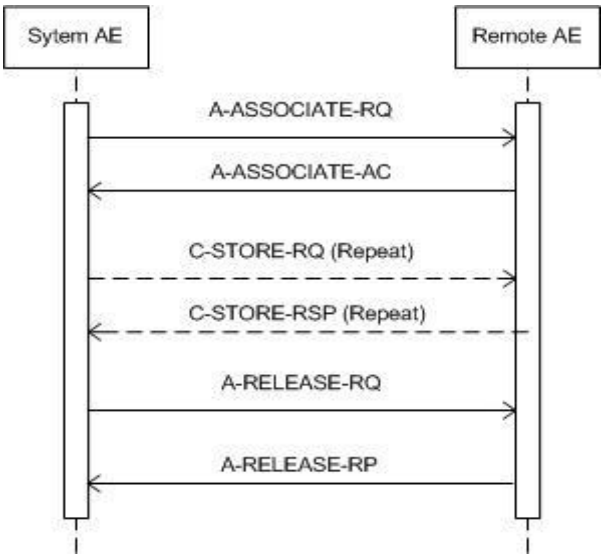


**Figure 7: (Real World) Activity – Export of Instances (Archive Storage SCU)**

#### 4.2.1.3.3.2. Proposed Presentation Contexts

The presentation contexts for the Export Instances are defined in the next table.

**Table 19: Proposed Presentation Contexts for (Real-World) Activity – Image Export**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Hardcopy Grayscale Image Storage (Retired) | 1.2.840.10008.5.1.1.29 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Hardcopy Color Image Storage (Retired) | 1.2.840.10008.5.1.1.30 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Computed Radiography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital X-Ray Image Storage - For Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital X-Ray Image Storage - For Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Mammography X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Mammography X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.2.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Digital Intra-oral X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Intra-oral X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.3.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone Modality LUT Storage (Retired) | 1.2.840.10008.5.1.4.1.1.10 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Encapsulated PDF Storage | 1.2.840.10008.5.1.4.1.1.104.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone VOI LUT Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.11 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Grayscale Softcopy Presentation State Storage SOP Class | 1.2.840.10008.5.1.4.1.1.11.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Angiographic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.1 | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | SCU | None |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Radiofluoroscopic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Angiographic Bi-Plane Image Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.12.3 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Positron Emission Tomography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.128 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone PET Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.129 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| **Abstract Syntax** | | **Transfer Syntax** | | **Role** | **Extended Negotiation** |
| **Name** | **UID** | **Name List** | **UID List** | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| CT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Nuclear Medicine Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.20 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Ultrasound Multi-frame Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.3 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Ultrasound Multi-frame Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.3.1 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| MR Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.4 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| RT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| RT Dose Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| RT Structure Set Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Ultrasound Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.6 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Ultrasound Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.6.1 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Raw Data Storage SOP Class | 1.2.840.10008.5.1.4.1.1.66 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Multi-frame Single Bit Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.1 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Multi-frame Grayscale Byte SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.2 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Multi-frame Grayscale Word SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.3 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Multi-frame True Color Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.4 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone Overlay Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.8 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Basic Text SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.11 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Enhanced SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.22 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Detail SR Storage - Trial (Retired) | 1.2.840.10008.5.1.4.1.1.88.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Comprehensive SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.33 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Radiation Dose SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.67 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.9 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| General ECG Waveform Storage SOP Class | 1.2.840.10008.5.1.4.1.1.9.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private X-Ray Image Storage | 1.3.46.670589.2.3.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private Reconstructed X- | 1.3.46.670589.2.4.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| ray Storage | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private iE33 3D NEO Presentation State Subpage Storage | 1.3.46.670589.2.5.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum 3D Volume New Storage | 1.3.46.670589.5.0.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum MR Synthetic Image Storage | 1.3.46.670589.5.0.10 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum MR Cardio Analysis New Storage | 1.3.46.670589.5.0.11.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum CX Synthetic Image Storage | 1.3.46.670589.5.0.12 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum Perfusion Storage | 1.3.46.670589.5.0.13 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum Perfusion Analysis Storage | 1.3.46.670589.5.0.14 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum 3D Volume Object New Storage | 1.3.46.670589.5.0.2.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum Surface New Storage | 1.3.46.670589.5.0.3.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum MR Cardio New Storage | 1.3.46.670589.5.0.8.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum CT Synthetic Image Storage | 1.3.46.670589.5.0.9 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

#### 4.2.1.3.3.3. SOP Specific Conformance for Storage SOP Classes

During DICOM based auto-forward, transfer negotiations may indicate that the original format of the data is not accepted by the target node. In such cases, the DICOM ARCHIVE server will try to apply one of the transfer syntax conversions indicated by '+', in order to get to transfer syntax that is supported by the external system. The Transfer syntax conversion is supported from SCU to SCP.

| Source Syntax | Destination Syntax | | |
|---|---|---|---|
| | ILE | ELE | EBE |
| ILE | - | + | + |
| ELE | + | - | + |
| EBE | + | + | - |
| JPEG Baseline | - | - | - |
| JPEG Lossless FOP Non-Hierarchical 14 | + | + | + |
| RLE | + | + | + |

**Figure 8: Transfer Syntax Convertion from Source to Destination.**

The list of updated patient and study attributes are mentioned in the tables below.

**Table 20: List of updated Patient Attributes**

| Attribute | DICOM Tag |
|---|---|
| Last Name | Part of (0010,0010) |
| First name | Part of (0010,0010) |
| Middle name | Part of (0010,0010) |
| Date of birth | (0010,0030) |
| Sex | (0010,0040) |
| Issuer of Patient ID | (0010,0021) |
| MRN | (0010,0020) |
| Alternate ID# | (0010,1000) |
| Title | Part of (0010,0010) |
| Honorific | Part of (0010,0010) |
| Address 1 | Part of (0010,1040) |
| Address 2 (if Address1 is empty) | Part of (0010,1040) |
| City | Part of (0010,1040) |
| State/Province | (0010,2152) |
| Postal code | Part of (0010,1040) |
| Country | (0010,2150) |
| Race | (0010,2160) |
| Home phone | Part of (0010,2154) |
| Business phone | Part of (0010,2154) |
| Mobile phone | Part of (0010,2154) |

**Table 21: List of updated Study Attributes**

| Attribute | DICOM Tag |
|---|---|
| Study Description | (0008,1030) |
| Accession Number | (0008,0050) |
| Body Part | (0018,0015) |
| Protocol Name | (0018,1030) |
| Admitting Diagnoses Description | (0008,1080) |

| Attribute | DICOM Tag |
|---|---|
| Performed By | (0008,1050) |
| Reading Physician | (0008,1060) |
| Ordering Physician | (0032,1032) |
| Reviewer | (300E,0008) |
| Referring Physician | (0008,0090) |
| Institution Department Name | (0008,1040) |
| Station Name | (0008,1010) |
| Study Comments | (0032,4000) |

#### 4.2.1.3.3.3.1. Dataset Specific Conformance for C-STORE-RQ

Detail regarding the Dataset Specific response behavior will be reported in this section.
This includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.
STORE-SCU acts on the Status Reponses which are shown in the next table:

**Table 22: DICOM command response status handling behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Successful stored | Log; Continue. |
| Refused | A700 | Data set does not match SOP class | Log. |
| | 0122 | SOP Class Not Supported | |
| Warning | B000 | Coercion of data elements | Log; Continue. |
| | B006 | Elements discarded | Log; Continue. |
| | B007 | Data set does not match SOP class | Log; Continue. |
| Error | 0110 | Error – Processing failure | Log. |
| | A900 | Error – Data set does not match SOP class | Log. |
| | C000 | Error – Cannot understand | Log. |

**Exceptions:**
1. If, after setting up the connection, no data can be sent to the external DICOM node for 2 minutes, IntelliSpace Cardiovascular will retry for 15 times with an interval of 2^n and then it will abort the connection.
2. If an error occurs on IntelliSpace Cardiovascular while setting up the connection, IntelliSpace Cardiovascular aborts and reports error.
3. If an error occurs on the external DICOM node while setting up the connection, IntelliSpace Cardiovascular will abort all actions related to that connection and report errors.
4. If no agreement between the two parties can be reached concerning communication parameters the connection will be closed and no data transfer will take place.
5. When a network error occurs during connection set up or during data transfer, IntelliSpace Cardiovascular will abort all actions related to the connection.
6. If an error occurs on IntelliSpace Cardiovascular during the data transfer, IntelliSpace Cardiovascular will notify the external DICOM node of this problem. After retrying notifying the external DICOM node of this problem for 15 times, with an interval of 2^n, the connection will be closed.

**Table 23: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| Timeout | The association is closed and the reason logged |
| Association aborted | The association is closed and the reason logged |

#### 4.2.1.3.4. (Real-World) Activity – Storage Commitment Push Model AS SCU

##### 4.2.1.3.4.1. Description and Sequencing of Activities

**Normal Flow of events:**

1. After the configured time, IntelliSpace Cardiovascular will initiate a Storage Commit request for the study that it stored into the DICOM Archive.
2. When a successful response from the DICOM archive is received, for this study, IntelliSpace Cardiovascular mark this study as correctly archived.

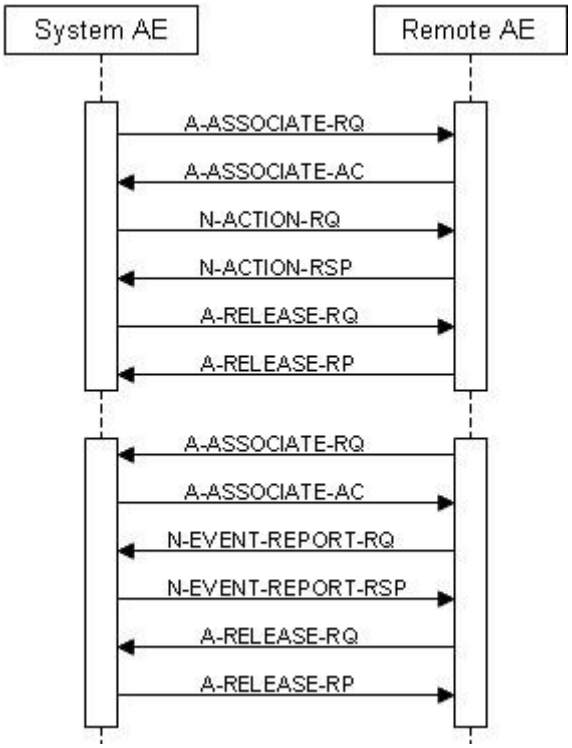


**Figure 9: (Real World) Activity - Storage Commitment Push Model AS SCU**

##### 4.2.1.3.4.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

**Table 24: Proposed Presentation Contexts for (Real-World) Activity – Storage Commitment Push Model AS SCU**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Storage Commitment Push Model SOP Class | 1.2.840.10008.1.20.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

##### 4.2.1.3.4.3. SOP Specific Conformance for Storage Commitment Push Model SOP Class

The Archive AE (Storage Commitment) provides standard conformance to the Storage Commitment Push Model SOP Class.

###### 4.2.1.3.4.3.1. Dataset Specific Conformance for Storage Commitment Push Model SOP Class N-EVENT-REPORT-SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.

The N-EVENT-REPORT-SCP can send the next status responses as listed in the table below:

**Table 25: Status Response**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Confirmation | The association will be released. The reason is logged. |
| Failure | 0119 | Class/Instance conflict; the SOP Class of an instance in the Referenced SOP Instance Sequence did not correspond to the SOP class of the SOP Instance stored at the SCP | The reason is logged. |
| | 0213 | Resource limitation The SCP does not currently have enough resources to store the requested SOP Instance(s). | The reason is logged. |
| | 0110 | Processing failure A general failure in processing the operation was encountered | The reason is logged. |
| | 0112 | No such object instance One or more of the elements in the Referenced SOP Instance Sequence was not available. | The reason is logged. |
| | 0122 | Referenced SOP Class not supported Storage Commitment has been requested for a SOP Instance with a SOP Class that is not supported by the SCP. | The reason is logged. |
| | 0131 | Duplicate transaction UID The Transaction UID of the Storage Commitment Request is already in use. | The reason is logged. |

**Table 26: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| Reply Time-out | The association is released. |
| Association Time-out SCU | The association is released. |
| Association Aborted | The association is released. |

#### 4.2.1.3.4.3.2. Dataset Specific Conformance for Storage Commitment Push Model SOP Class N-ACTION-SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

**Table 27: Storage Commitment Attribute for N-ACTION-RQ**

| Attribute Name | Tag | Comment |
|---|---|---|
| **Storage Commitment Module** | | |
| Transaction UID | 0008,1195 | - |
| Referenced SOP Sequence | 0008,1199 | - |
| >Referenced SOP Class UID | 0008,1150 | - |
| >Referenced SOP Instance UID | 0008,1155 | - |

The N-ACTION-SCU will act the status responses as listed in the table below:

**Table 28: DICOM command response status handling behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Confirmation | The association will not release. The reason is logged. |
| Other than Success | <>0000 | Problems with sending the N-ACTION Request | The reason is logged. |

During the N-ACTION-SCU communication the next failures can occur:

**Table 29: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| Reply Time-out | The association is released. |
| Association Time-out SCU | The association is released. |
| Association Aborted | The association is released. |

**Exceptions:**
1. After setting up the connection, if no data can be sent to the external node for 60 seconds, IntelliSpace Cardiovascular aborts the connection and reports an error.
2. An error occurs on the target node while setting up the connection. If the retries are unsuccessful, the system will mark the data for later archiving.
3. If an error or warning concerning data transfer is received from the target node during data transfer. If it is related to the data being send IntelliSpace Cardiovascular tries to correct the cause of the error
4. When IntelliSpace Cardiovascular cannot setup connection with the DICOM Archive, IntelliSpace Cardiovascular will retry for 3 times (configurable). If within these retries, if it is still not possible to setup the connection, the study will be re-archived, conforms its own retry mechanism and a warning will be reported.
5. When IntelliSpace Cardiovascular does not receive a storage commit report within 72 hours, the study will be re-archived, conforms its own retry mechanism and a warning will be reported.
6. When the IntelliSpace Cardiovascular receives a storage commit response other than successful, the study will be re-archived, conforms to its own retry mechanism and a warning will be reported.

#### 4.2.1.4. Association Acceptance Policy

Not applicable, Archive AE does not accept associations.

##### 4.2.1.4.1. (Real-World) Activity – Image Import

###### 4.2.1.4.1.1. Description and Sequencing of Activities

As defined by the IntelliSpace Cardiovascular System RWA Import instances, the Import image AE acts as a Storage SCP for any DICOM Archive that is configured on the IntelliSpace Cardiovascular System, using an accepted presentation context.

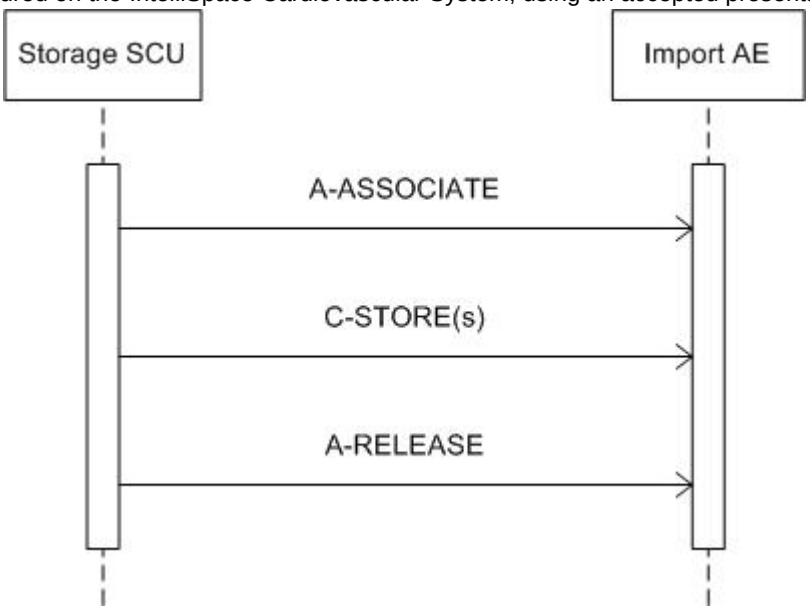


Figure 10: Import Image AE as Storage SCP

The Import Image AE accepts associations from other systems that wish to store instances in the IntelliSpace Cardiovascular System database, using the C-STORE command.

###### 4.2.1.4.1.2. Accepted Presentation Contexts

The accepted presentation contexts for Image Import are listed in the next table.

Table 30: Acceptable Presentation Contexts for (Real-World) Activity – Image Import

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Hardcopy Grayscale Image Storage (Retired) | 1.2.840.10008.5.1.1.29 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Hardcopy Color Image Storage (Retired) | 1.2.840.10008.5.1.1.30 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Computed Radiography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Digital X-Ray Image Storage - For Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital X-Ray Image Storage - For Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Mammography X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Mammography X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.2.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Intra-oral X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Intra-oral X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.3.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone Modality LUT Storage (Retired) | 1.2.840.10008.5.1.4.1.1.10 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Encapsulated PDF Storage | 1.2.840.10008.5.1.4.1.1.104.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone VOI LUT Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.11 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Grayscale Softcopy Presentation State Storage SOP Class | 1.2.840.10008.5.1.4.1.1.11.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Angiographic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Radiofluoroscopic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Angiographic Bi-Plane Image Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.12.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Positron Emission Tomography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.128 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone PET Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.129 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| CT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Nuclear Medicine Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.20 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Ultrasound Multi-frame Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Ultrasound Multi-frame Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.3.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| MR Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.4 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| RT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| RT Dose Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| RT Structure Set Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Ultrasound Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.6 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Ultrasound Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.6.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Raw Data Storage SOP Class | 1.2.840.10008.5.1.4.1.1.66 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Multi-frame Single Bit Secondary | 1.2.840.10008.5.1.4.1.1.7.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| **Abstract Syntax** | | **Transfer Syntax** | | **Role** | **Extended Negotiation** |
| **Name** | **UID** | **Name List** | **UID List** | | |
| Capture Image Storage SOP Class | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Multi-frame Grayscale Byte SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Multi-frame Grayscale Word SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Multi-frame True Color Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.4 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone Overlay Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.8 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Basic Text SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.11 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Enhanced SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.22 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Detail SR Storage - Trial (Retired) | 1.2.840.10008.5.1.4.1.1.88.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Comprehensive SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.33 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Radiation Dose SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.67 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.9 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| General ECG Waveform Storage SOP Class | 1.2.840.10008.5.1.4.1.1.9.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private X-Ray Image Storage | 1.3.46.670589.2.3.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private Reconstructed X-ray Storage | 1.3.46.670589.2.4.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Philips Private iE33 3D NEO Presentation State Subpage Storage | 1.3.46.670589.2.5.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum 3D Volume New Storage | 1.3.46.670589.5.0.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum MR Synthetic Image Storage | 1.3.46.670589.5.0.10 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum MR Cardio Analysis New Storage | 1.3.46.670589.5.0.11.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum CX Synthetic Image Storage | 1.3.46.670589.5.0.12 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum Perfusion Storage | 1.3.46.670589.5.0.13 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum Perfusion Analysis Storage | 1.3.46.670589.5.0.14 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum 3D Volume Object New Storage | 1.3.46.670589.5.0.2.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum Surface New Storage | 1.3.46.670589.5.0.3.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum MR Cardio New Storage | 1.3.46.670589.5.0.8.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum CT Synthetic Image Storage | 1.3.46.670589.5.0.9 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

The IntelliSpace Cardiovascular System does not support extended negotiations for Image Import.

The order of the proposed transfer syntaxes is configurable. Default the ELE transfer syntax is preferred.

#### 4.2.1.4.1.3. SOP Specific Conformance for Storage SOP Classes

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.
The possible Communication Failures and the possible Status Responses during a C-STORE-RQ are listed in the next tables below.

#### 4.2.1.4.1.3.1. Dataset Specific Conformance for C-STORE-RSP

Possible status responses during the C-STORE responses are shown in the next table:

**Table 31: Status Response**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Successful stored | Log; continue. |
| Failure | A7xx | Refused: Out of Resources | Log; continue. |
| | A9xx | Error: Data Set does not match SOP Class | Log; continue. |
| | Cxxx | Error: cannot understand | Log; continue. |
| Warning | B000 | Coercion of Data Elements | Log; continue. |
| | B007 | Data Set does not match SOP Class | Log; continue. |
| | B006 | Elements Discarded | Log; continue. |

The possible network communication failures are shown in the following table:

**Table 32: Communication Failure Behavior for C-STORE-RSP.**

| Exception | Behavior |
|---|---|
| ARTIM Time-out | The store job fails in case of association setup. The reason is logged. |
| Reply Time-out | The store job fails and association is aborted. The reason is logged. |
| Association Time-out SCU | The association is released. |
| Association aborted | The store job fails. The reason is logged. |

## 4.2.2. Auto Export AE

Detail of this specific Application Entity is specified in this section.

### 4.2.2.1. SOP Classes

The Image Export AE is used for exporting DICOM Instances (images, objects) from IntelliSpace Cardiovascular Server to remote system. The Image Export AE makes use of the following DICOM functions:

- Verification as SCU, which uses C-ECHO service element.
- Storage as SCU, which uses C-STORE as service element.
- Patient / Study are always updates with the latest information for the exported studies. (Refer to the tables in section 4.2.2.3.2.3 for the list of updated patient and study attributes)

These DICOM functions will be described in the following subsections.

The Auto Export Application Entity provides Standard Conformance to the following SOP Classes:

**Table 33: SOP Classes for Auto Export AE**

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Verification SOP Class | 1.2.840.10008.1.1 | Yes | No |
| Hardcopy Grayscale Image Storage (Retired) | 1.2.840.10008.5.1.1.29 | Yes | No |
| Hardcopy Color Image Storage (Retired) | 1.2.840.10008.5.1.1.30 | Yes | No |
| Computed Radiography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.1 | Yes | No |
| Digital X-Ray Image Storage - For Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.1 | Yes | No |
| Digital X-Ray Image Storage - For Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.1.1 | Yes | No |
| Digital Mammography X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.2 | Yes | No |
| Digital Mammography X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.2.1 | Yes | No |
| Digital Intra-oral X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.3 | Yes | No |
| Digital Intra-oral X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.3.1 | Yes | No |
| Standalone Modality LUT Storage (Retired) | 1.2.840.10008.5.1.4.1.1.10 | Yes | No |
| Encapsulated PDF Storage | 1.2.840.10008.5.1.4.1.1.104.1 | Yes | No |
| Standalone VOI LUT Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.11 | Yes | No |
| Grayscale Softcopy Presentation State Storage SOP Class | 1.2.840.10008.5.1.4.1.1.11.1 | Yes | No |
| X-Ray Angiographic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.1 | Yes | No |
| X-Ray Radiofluoroscopic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.2 | Yes | No |
| X-Ray Angiographic Bi-Plane Image Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.12.3 | Yes | No |
| Positron Emission Tomography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.128 | Yes | No |
| Standalone PET Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.129 | Yes | No |
| CT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.2 | Yes | No |
| Nuclear Medicine Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.20 | Yes | No |
| Ultrasound Multi-frame Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.3 | Yes | No |
| Ultrasound Multi-frame Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.3.1 | Yes | No |
| MR Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.4 | Yes | No |
| RT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.1 | Yes | No |
| RT Dose Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.2 | Yes | No |
| RT Structure Set Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.3 | Yes | No |
| RT Plan Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.5 | Yes | No |

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Ultrasound Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.6 | Yes | No |
| Ultrasound Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.6.1 | Yes | No |
| Raw Data Storage SOP Class | 1.2.840.10008.5.1.4.1.1.66 | Yes | No |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 | Yes | No |
| Multi-frame Single Bit Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.1 | Yes | No |
| Multi-frame Grayscale Byte SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.2 | Yes | No |
| Multi-frame Grayscale Word SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.3 | Yes | No |
| Multi-frame True Color Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.4 | Yes | No |
| Standalone Overlay Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.8 | Yes | No |
| Basic Text SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.11 | Yes | No |
| Enhanced SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.22 | Yes | No |
| Detail SR Storage - Trial (Retired) | 1.2.840.10008.5.1.4.1.1.88.3 | Yes | No |
| Comprehensive SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.33 | Yes | No |
| X-Ray Radiation Dose SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.67 | Yes | No |
| Standalone Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.9 | Yes | No |
| General ECG Waveform Storage SOP Class | 1.2.840.10008.5.1.4.1.1.9.1.2 | Yes | No |
| Philips Private X-Ray Image Storage | 1.3.46.670589.2.3.1.1 | Yes | No |
| Philips Private Reconstructed X-ray Storage | 1.3.46.670589.2.4.1.1 | Yes | No |
| Philips Private iE33 3D NEO Presentation State Subpage Storage | 1.3.46.670589.2.5.1.1 | Yes | No |
| Philips Private ViewForum 3D Volume New Storage | 1.3.46.670589.5.0.1.1 | Yes | No |
| Philips Private ViewForum MR Synthetic Image Storage | 1.3.46.670589.5.0.10 | Yes | No |
| Philips Private ViewForum MR Cardio Analysis New Storage | 1.3.46.670589.5.0.11.1 | Yes | No |
| Philips Private ViewForum CX Synthetic Image Storage | 1.3.46.670589.5.0.12 | Yes | No |
| Philips Private ViewForum Perfusion Storage | 1.3.46.670589.5.0.13 | Yes | No |
| Philips Private ViewForum Perfusion Analysis Storage | 1.3.46.670589.5.0.14 | Yes | No |
| Philips Private ViewForum 3D Volume Object New Storage | 1.3.46.670589.5.0.2.1 | Yes | No |
| Philips Private ViewForum Surface New Storage | 1.3.46.670589.5.0.3.1 | Yes | No |
| Philips Private ViewForum MR Cardio New Storage | 1.3.46.670589.5.0.8.1 | Yes | No |
| Philips Private ViewForum CT Synthetic Image Storage | 1.3.46.670589.5.0.9 | Yes | No |

Note that any SOP specific behavior is documented later in this conformance statement into the applicable SOP specific conformance section.

#### 4.2.2.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

##### 4.2.2.2.1. General

The DICOM standard application context is specified below.

**Table 34: DICOM Application Context**

| Description | Value |
|---|---|
| Application Context Name | 1.2.840.10008.3.1.1.1 |

#### 4.2.2.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as an Initiator or Acceptor is specified here.

**Table 35: Number of associations as an Association Initiator for this AE**

| Description | Value |
|---|---|
| Maximum number of simultaneous associations | Limited by system resource. |

#### 4.2.2.2.3. Asynchronous Nature

The implementation supports negotiation of multiple outstanding transactions, along with the maximum number of outstanding transactions supported.

**Table 36: Asynchronous nature as an Association Initiator for this AE**

| Description | Value |
|---|---|
| Maximum number of outstanding asynchronous transactions | Not applicable |

#### 4.2.2.2.4. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

**Table 37: DICOM Implementation Class and Version for Auto Export AE**

| | |
|---|---|
| Implementation Class UID | 1.3.46.670589.16.14.4.1.1 |
| Implementation Version Name | ISCV R1.1.L1 |

#### 4.2.2.2.5. Communication Failure Handling

The behavior of the AE during communication failure is summarized in the next table.

**Table 38: Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| ARTIM Timeout | The association closed and the reason is logged. |

### 4.2.2.3. Association Initiation Policy

The Application Entity will respond on a received reject Association attempt as shown in next table.

**Table 39: Association Rejection response**

| Result | Source | Reason/Diagnosis | Explanation |
|---|---|---|---|
| 1 - rejected-permanent | 1 - DICOM UL service-user | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - application-context-name-not supported | The user is informed. Details are logged in central log file. |
| | | 3 - calling-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | | 7 - called-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | 2 - DICOM UL service-provider (ACSE related function) | 1 - no-reason-given | The user is informed. Details are logged in central log file. |

| Result | Source | Reason/Diagnosis | Explanation |
|---|---|---|---|
| | | 2 - protocol-version-not-supported | The user is informed. Details are logged in central log file. |
| | 3 - DICOM UL service-provider (Presentation related function) | 1 - temporary-congestion | The user is informed. Details are logged in central log file. |
| | | 2 - local-limit-exceeded | The user is informed. Details are logged in central log file. |
| 2 - rejected-transient | 1 - DICOM UL service-user | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - application-context-name-not-supported | The user is informed. Details are logged in central log file. |
| | | 3 - calling-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | | 7 - called-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | 2 - DICOM UL service-provider (ACSE related function) | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - protocol-version-not-supported | The user is informed. Details are logged in central log file. |
| | 3 - DICOM UL service-provider (Presentation related function) | 1 - temporary-congestion | The user is informed. Details are logged in central log file. |
| | | 2 - local-limit-exceeded | The user is informed. Details are logged in central log file. |

The behavior of the AE on receiving an association abort is summarized in the next table.

**Table 40: Association Abort Handling**

| Source | Reason/Diagnosis | Behavior |
|---|---|---|
| 0 - DICOM UL service-user (initiated abort) | 0 - reason-not-specified | When received, terminates the connection and logs the event. |
| 2 - DICOM UL service-provider (initiated abort) | 0 - reason-not-specified | When received, terminates the connection and logs the event. |
| | 1 - unrecognized-PDU | When received, terminates the connection and logs the event. |
| | 2 - unexpected-PDU | When received, terminates the connection and logs the event. |
| | 4 - unrecognized-PDU-parameter | When received, terminates the connection and logs the event. |
| | 5 - unexpected-PDU-parameter | When received, terminates the connection and logs the event. |
| | 6 - invalid-PDU-parameter-value | When received, terminates the connection and logs the event. |

#### 4.2.2.3.1. (Real-World) Activity – Verification as SCU

##### 4.2.2.3.1.1. Description and Sequencing of Activities

Auto Export AE initiates an association with the remote AE.

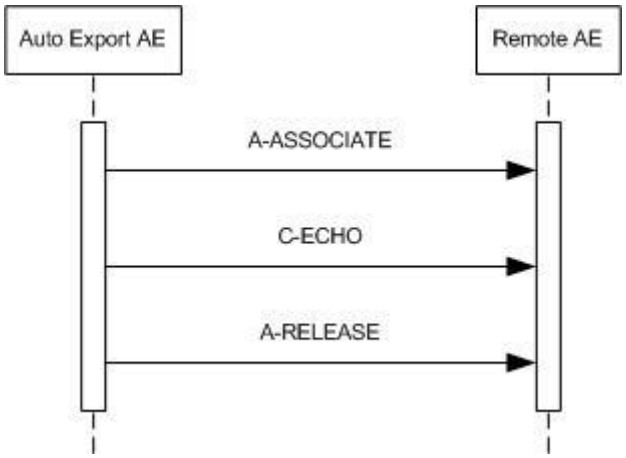


**Figure 11: (Real World) Activity - Verification as SCU.**

#### 4.2.2.3.1.2. Proposed Presentation Contexts

Each time an association is initiated, the association initiator proposes a number of presentation contexts to be used on that association. The association will be closed immediately upon receiving the response.
The presentation contexts proposed by DICOM Manager for (Real-World) Activity - Verification as SCU are defined in the following table.

**Table 41: Proposed Presentation Contexts for (Real-World) Activity – Verification as SCU**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Verification SOP Class | 1.2.840.10008.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

#### 4.2.2.3.1.3. SOP Specific Conformance for Verification SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

##### 4.2.2.3.1.3.1. Dataset Specific Conformance for Verification C-ECHO SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 42: Status Response**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Success, Matching is complete | The SCU has successfully send C-ECHO. |
| Other than success | <>0000 | Problems with sending the C-ECHO | The SCU failed to send the C-ECHO; user is notified. Logged |

#### 4.2.2.3.2. (Real-World) Activity – Image Export

#### 4.2.2.3.2.1. Description and Sequencing of Activities

The (Real World) Activity - Image Export (Data Export) is explained here for a Normal flow of events:

1. IntelliSpace Cardiovascular sets up a connection with the target DICOM node and negotiates communications parameters. If the two parties cannot agree on transfer using the data format stored on the server, IntelliSpace Cardiovascular will negotiate an alternative DICOM transfer syntax and create a converted copy of the study data to be transferred.
2. Then IntelliSpace Cardiovascular transfers data (complete study or SC only) to the target DICOM node depending on configuration setting, IntelliSpace Cardiovascular auto forwards studies completely, or only new deltas such as photo files or new instances coming from an acquisition system.
3. Upon completion of this transfer, the connection is closed. Connection set up and connection release, and data transfer takes place according to the DICOM Store protocol defined as part of the DICOM 3.0 standard.

The next figure shows the image (instance) export functionality.

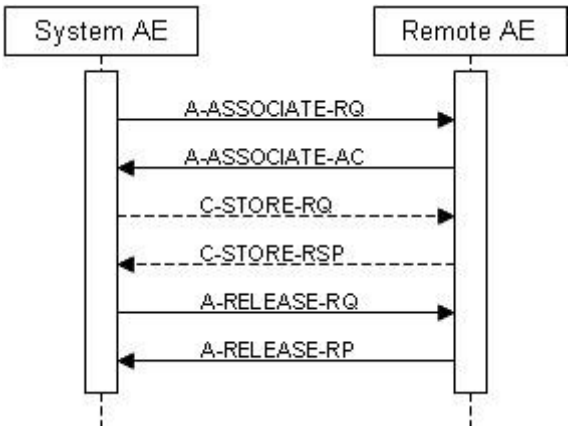


**Figure 12: (Real World) Activity - Image Export (Data Export)**

#### 4.2.2.3.2.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

**Table 43: Proposed Presentation Contexts for (Real-World) Activity – Image Export**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Hardcopy Grayscale Image Storage (Retired) | 1.2.840.10008.5.1.1.29 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Hardcopy Color Image Storage (Retired) | 1.2.840.10008.5.1.1.30 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Computed Radiography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital X-Ray Image Storage - For Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Digital X-Ray Image Storage - For Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Mammography X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Mammography X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.2.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Intra-oral X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Intra-oral X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.3.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone Modality LUT Storage (Retired) | 1.2.840.10008.5.1.4.1.1.10 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Encapsulated PDF Storage | 1.2.840.10008.5.1.4.1.1.104.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone VOI LUT Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.11 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Grayscale Softcopy Presentation State Storage SOP Class | 1.2.840.10008.5.1.4.1.1.11.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Angiographic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| X-Ray Radiofluoroscopic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Angiographic Bi-Plane Image Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.12.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Positron Emission Tomography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.128 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone PET Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.129 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Nuclear Medicine Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.20 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Ultrasound Multi-frame Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Ultrasound Multi-frame Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.3.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| MR Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.4 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| RT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| RT Dose Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| RT Structure Set Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Ultrasound Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.6 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Ultrasound Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.6.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Raw Data Storage SOP Class | 1.2.840.10008.5.1.4.1.1.66 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Multi-frame Single Bit Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.1 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Multi-frame Grayscale Byte SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.2 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Multi-frame Grayscale Word SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.3 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Multi-frame True Color Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.4 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone Overlay Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.8 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Basic Text SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.11 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Enhanced SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.22 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Detail SR Storage - Trial (Retired) | 1.2.840.10008.5.1.4.1.1.88.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Comprehensive SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.33 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Radiation Dose SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.67 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | SCU |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.9 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| General ECG Waveform Storage SOP Class | 1.2.840.10008.5.1.4.1.1.9.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private X-Ray Image Storage | 1.3.46.670589.2.3.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private Reconstructed X-ray Storage | 1.3.46.670589.2.4.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private iE33 3D NEO Presentation State Subpage | 1.3.46.670589.2.5.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Storage | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum 3D Volume New Storage | 1.3.46.670589.5.0.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum MR Synthetic Image Storage | 1.3.46.670589.5.0.10 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum MR Cardio Analysis New Storage | 1.3.46.670589.5.0.11.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum CX Synthetic Image Storage | 1.3.46.670589.5.0.12 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum Perfusion Storage | 1.3.46.670589.5.0.13 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum Perfusion Analysis Storage | 1.3.46.670589.5.0.14 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum 3D Volume Object New Storage | 1.3.46.670589.5.0.2.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum Surface New Storage | 1.3.46.670589.5.0.3.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum MR Cardio New Storage | 1.3.46.670589.5.0.8.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum CT Synthetic Image Storage | 1.3.46.670589.5.0.9 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

#### 4.2.2.3.2.3. SOP Specific Conformance for Storage SOP Classes

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

##### 4.2.2.3.2.3.1. Dataset Specific Conformance for C-STORE-RQ

Detail regarding the Dataset Specific response behavior will be reported in this section.
This includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 44: DICOM command response status handling behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Successful stored | Log: Continue. |
| Refused | A700 | Refused – Out of resources | Log; Release association; Release application; Retry to send the images. |
| Failure | 0110 | Error – Processing failure | Log; Release association; Release application; Retry to send the images |
| | A900 | Error – Data set does not match SOP class | Log; Release association; Release application; Retry to send the images |
| | C000 | Error – Cannot understand | Log; Release association; Release application; Retry to send the images |
| Warning | B000 | Coercion of Data Elements | Log; Continue |
| | B007 | Data Set does not match SOP Class | Log; Continue |
| | B006 | Elements Discarded | Log; Continue |

**Exceptions:**
IntelliSpace Cardiovascular always retry in case of errors for 15 times, with an interval of 2^n, before aborting the connection in the following cases:
1. If, after setting up the connection, no data can be sent to the external node for 60 seconds, IntelliSpace Cardiovascular aborts the connection.
2. If an error occurs on IntelliSpace Cardiovascular while setting up the connection, IntelliSpace Cardiovascular aborts the connection.
3. If an error occurs on the target node while setting up the connection. If the retries are unsuccessful, the system will mark the data for later.
4. If an error occurs on IntelliSpace Cardiovascular during the instance conversion or the instance transfer, IntelliSpace Cardiovascular will abort the auto forward process. A final error will be reported.
5. If an error occurs on the target node during data transfer, results the connection to be aborted IntelliSpace Cardiovascular will report this error.
6. An error or warning concerning data transfer is received from the target node during data transfer. If it is related to the data being send, IntelliSpace Cardiovascular tries to correct the cause of the error (e.g. by redoing the conversion). All information available on the error or warning will be reported.
7. Only the DICOM instances of the services where both parties agreed upon are forwarded, this will be reported.

During the DICOM based auto-forward, the transfer negotiations may indicate that the original format of the data is not accepted by the target node. In such cases, the DICOM ARCHIVE server will try to apply one of the transfer syntax conversions indicated by '+', in order to get to transfer syntax that is supported by the external system.
Next table gives an overview of the supported Transfer Syntax conversions from SCU to SCP.

| Source Syntax | Destination Syntax | | |
|---|---|---|---|
| | ILE | ELE | EBE |
| ILE | - | + | + |
| ELE | + | - | + |
| EBE | + | + | - |
| JPEG Baseline | - | - | - |
| JPEG Lossless FOP Non-Hierarchical 14 | + | + | + |
| RLE | + | + | + |

**Figure 13: Transfer Syntax Conversion from SCU to SCP.**

The list of updated patient and study attributes are mentioned in the tables below.

**Table 45: List of updated Patient Attributes**

| Attribute | DICOM Tag |
|---|---|
| Last Name | Part of (0010,0010) |
| First name | Part of (0010,0010) |
| Middle name | Part of (0010,0010) |
| Date of birth | (0010,0030) |
| Sex | (0010,0040) |
| Issuer of Patient ID | (0010,0021) |
| MRN | (0010,0020) |
| Alternate ID# | (0010,1000) |
| Title | Part of (0010,0010) |
| Honorific | Part of (0010,0010) |
| Address 1 | Part of (0010,1040) |
| Address 2 (if Address1 is empty) | Part of (0010,1040) |
| City | Part of (0010,1040) |
| State/Province | (0010,2152) |
| Postal code | Part of (0010,1040) |
| Country | (0010,2160) |
| Race | Part of (0010,2154) |
| Home phone | Part of (0010,2154) |
| Business phone | Part of (0010,2154) |
| Mobile phone | |

**Table 46: List of updated Study Attributes**

| Attribute | DICOM Tag |
|---|---|
| Study Description | (0008 ,1030) |
| Accession Number | (0008,0050) |
| Body Part | (0018,0015) |
| Protocol Name | (0018,1030) |
| Admitting Diagnoses Description | (0008,1080) |
| Performed By | (0008,1050) |
| Reading Physician | (0008,1060) |
| Ordering Physician | (0032,1032) |
| Reviewer | (300E,0008) |
| Referring Physician | (0008,0090) |
| Institution Department Name | (0008,1040) |
| Station Name | (0008,1010) |
| Study Comments | (0032,4000) |

The possible Communication Failures are given in the following table:

**Table 47: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| Timeout | The association is closed and the reason is logged. |
| Association aborted | The association is closed and the reason is logged. |

#### 4.2.2.4. Association Acceptance Policy

Not applicable, Auto Export AE does not accept any associations.

## 4.2.3. Image Import AE

Detail of this specific Application Entity is specified in this section.

### 4.2.3.1. SOP Classes

The Image Import AE is used for importing DICOM Instances (images, objects) from remote system into IntelliSpace Cardiovascular Server. The Image Import AE makes use of the following DICOM functions:

- Verification as SCP, which uses C-ECHO service element.
- Storage as SCP, which uses C-STORE as service element.
- Storage Commitment as SCP, which uses N-ACTION and N-EVENT-REPORT service elements.

The separate AE's need to be configured for Storage and Storage Commitment functionalities.

This Application Entity provides Standard Conformance to the following SOP Classes.

**Table 48: SOP Classes for Image Import AE**

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Verification SOP Class | 1.2.840.10008.1.1 | No | Yes |
| Storage Commitment Push Model SOP Class | 1.2.840.10008.1.20.1 | No | Yes |
| Hardcopy Grayscale Image Storage (Retired) | 1.2.840.10008.5.1.1.29 | No | Yes |
| Hardcopy Color Image Storage (Retired) | 1.2.840.10008.5.1.1.30 | No | Yes |
| Computed Radiography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.1 | No | Yes |
| Digital X-Ray Image Storage - For Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.1 | No | Yes |
| Digital X-Ray Image Storage - For Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.1.1 | No | Yes |
| Digital Mammography X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.2 | No | Yes |
| Digital Mammography X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.2.1 | No | Yes |
| Digital Intra-oral X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.3 | No | Yes |
| Digital Intra-oral X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.3.1 | No | Yes |
| Standalone Modality LUT Storage (Retired) | 1.2.840.10008.5.1.4.1.1.10 | No | Yes |
| Encapsulated PDF Storage | 1.2.840.10008.5.1.4.1.1.104.1 | No | Yes |
| Standalone VOI LUT Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.11 | No | Yes |
| Grayscale Softcopy Presentation State Storage SOP Class | 1.2.840.10008.5.1.4.1.1.11.1 | No | Yes |
| X-Ray Angiographic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.1 | No | Yes |
| X-Ray Radiofluoroscopic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.2 | No | Yes |
| X-Ray Angiographic Bi-Plane Image Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.12.3 | No | Yes |
| Positron Emission Tomography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.128 | No | Yes |
| Standalone PET Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.129 | No | Yes |
| CT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.2 | No | Yes |
| Nuclear Medicine Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.20 | No | Yes |
| Ultrasound Multi-frame Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.3 | No | Yes |
| Ultrasound Multi-frame Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.3.1 | No | Yes |
| MR Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.4 | No | Yes |
| RT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.1 | No | Yes |
| RT Dose Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.2 | No | Yes |
| RT Structure Set Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.3 | No | Yes |
| RT Plan Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.5 | No | Yes |

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Ultrasound Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.6 | No | Yes |
| Ultrasound Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.6.1 | No | Yes |
| Raw Data Storage SOP Class | 1.2.840.10008.5.1.4.1.1.66 | No | Yes |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 | No | Yes |
| Multi-frame Single Bit Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.1 | No | Yes |
| Multi-frame Grayscale Byte SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.2 | No | Yes |
| Multi-frame Grayscale Word SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.3 | No | Yes |
| Multi-frame True Color Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.4 | No | Yes |
| Standalone Overlay Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.8 | No | Yes |
| Basic Text SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.11 | No | Yes |
| Enhanced SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.22 | No | Yes |
| Detail SR Storage - Trial (Retired) | 1.2.840.10008.5.1.4.1.1.88.3 | No | Yes |
| Comprehensive SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.33 | No | Yes |
| X-Ray Radiation Dose SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.67 | No | Yes |
| Standalone Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.9 | No | Yes |
| General ECG Waveform Storage SOP Class | 1.2.840.10008.5.1.4.1.1.9.1.2 | No | Yes |
| Philips Private X-Ray Image Storage | 1.3.46.670589.2.3.1.1 | No | Yes |
| Philips Private Reconstructed X-ray Storage | 1.3.46.670589.2.4.1.1 | No | Yes |
| Philips Private iE33 3D NEO Presentation State Subpage Storage | 1.3.46.670589.2.5.1.1 | No | Yes |
| Philips Private ViewForum 3D Volume New Storage | 1.3.46.670589.5.0.1.1 | No | Yes |
| Philips Private ViewForum MR Synthetic Image Storage | 1.3.46.670589.5.0.10 | No | Yes |
| Philips Private ViewForum MR Cardio Analysis New Storage | 1.3.46.670589.5.0.11.1 | No | Yes |
| Philips Private ViewForum CX Synthetic Image Storage | 1.3.46.670589.5.0.12 | No | Yes |
| Philips Private ViewForum Perfusion Storage | 1.3.46.670589.5.0.13 | No | Yes |
| Philips Private ViewForum Perfusion Analysis Storage | 1.3.46.670589.5.0.14 | No | Yes |
| Philips Private ViewForum 3D Volume Object New Storage | 1.3.46.670589.5.0.2.1 | No | Yes |
| Philips Private ViewForum Surface New Storage | 1.3.46.670589.5.0.3.1 | No | Yes |
| Philips Private ViewForum MR Cardio New Storage | 1.3.46.670589.5.0.8.1 | No | Yes |
| Philips Private ViewForum CT Synthetic Image Storage | 1.3.46.670589.5.0.9 | No | Yes |

Note: Any SOP specific behavior is documented later in the conformance statement in the applicable SOP specific conformance section.

#### 4.2.3.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

##### 4.2.3.2.1. General

The DICOM standard application context is specified below.

**Table 49: DICOM Application Context**

| Description | Value |
|---|---|
| Application Context Name | 1.2.840.10008.3.1.1.1 |

#### 4.2.3.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as an Initiator or Acceptor is specified here.

**Table 50: Number of associations as an Association Acceptor for this AE**

| Description | Value |
|---|---|
| Maximum number of simultaneous associations | Limit of system resources. |

#### 4.2.3.2.3. Asynchronous Nature

The implementation supports negotiation of multiple outstanding transactions, along with the maximum number of outstanding transactions supported.

**Table 51: Asynchronous nature as an Association Initiator for this AE**

| Description | Value |
|---|---|
| Maximum number of outstanding asynchronous transactions | Not applicable. |

#### 4.2.3.2.4. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

**Table 52: DICOM Implementation Class and Version for Image Import AE**

| | |
|---|---|
| Implementation Class UID | 1.3.46.670589.16.14.4.1.1 |
| Implementation Version Name | ISCV R1.1.L1 |

#### 4.2.3.2.5. Communication Failure Handling

The behavior of the AE during communication failure is summarized in the next table.

**Table 53: Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| ARTIM Timeout | The association is released and the reason is logged. |

### 4.2.3.3. Association Initiation Policy

Not applicable, Image Import AE does not initiate any associations.

#### 4.2.3.4. Association Acceptance Policy

The Application Entity may reject Association attempts as shown in the table below.

**Table 54: Association Reject Reasons**

| Result | Source | Reason/Diagnosis | Behavior |
|---|---|---|---|
| 1 - rejected permanent | 1 - DICOM UL service-user | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - application-context-name-not-supported | The user is informed. Details are logged in central log file. |
| | | 3 - calling-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | | 7 - called-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | 2 - DICOM UL service provider (ACSE related function) | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - protocol-version-not-supported | The user is informed. Details are logged in central log file. |
| | 3 - DICOM UL service provider (Presentation related function) | 1 - temporary-congestion | The user is informed. Details are logged in central log file. |
| | | 2 - local-limit-exceeded | The user is informed. Details are logged in central log file. |
| 2 - rejected-transient | 1 - DICOM UL service-user | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - application-context-name-not-supported | The user is informed. Details are logged in central log file. |
| | | 3 - calling-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | | 7 - called-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | 2 - DICOM UL service provider (ACSE related function) | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - protocol-version-not-supported | The user is informed. Details are logged in central log file. |
| | 3 - DICOM UL service provider (Presentation related function) | 1 - temporary-congestion | The user is informed. Details are logged in central log file. |
| | | 2 - local-limit-exceeded | The user is informed. Details are logged in central log file. |

The behavior of the AE for sending an association abort is summarized in next table.

**Table 55: Association Abort Policies**

| Source | Reason/Diagnosis | Behavior |
|---|---|---|
| 0 - DICOM UL service-user (initiated abort) | 0 - reason-not-specified | Notifies Remote AE, terminates the connection and logs the event. |
| 2 - DICOM UL service-provider (initiated abort) | 0 - reason-not-specified | Notifies Remote AE, terminates the connection and logs the event |
| | 1 - unrecognized-PDU | Notifies Remote AE, terminates the connection and logs the event |
| | 2 - unexpected-PDU | Notifies Remote AE, terminates the connection and logs the event |
| | 4 - unrecognized-PDU parameter | Notifies Remote AE, terminates the connection and logs the event |

| Source | Reason/Diagnosis | Behavior |
|---|---|---|
| | 5 - unexpected-PDU parameter | Notifies Remote AE, terminates the connection and logs the event |
| | 6 - invalid-PDU-parameter value | Notifies Remote AE, terminates the connection and logs the event |

#### 4.2.3.4.1. (Real-World) Activity – Verification as SCP

##### 4.2.3.4.1.1. Description and Sequencing of Activities

The Import Image AE accepts associations from systems that wish to verify application level communication using the C-ECHO command.

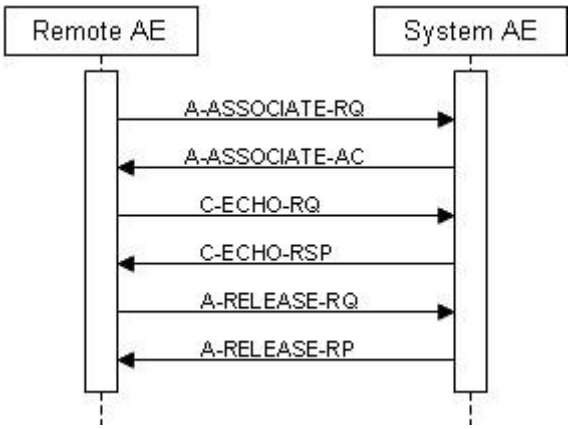


Figure 14: (Real World) Activity - Verification as SCP

##### 4.2.3.4.1.2. Accepted Presentation Contexts

The presentation contexts are defined in the next table.

Table 56: Acceptable Presentation Contexts for (Real-World) Activity – Verification as SCP

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Verification SOP Class | 1.2.840.10008.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

The Import Image AE accepts all contexts in the intersection of the proposed and acceptable Presentation Context. This means that the Import Image AE will accept multiple proposed Presentation Contexts with the same SOP Class but different Transfer Syntaxes, so there will be no checks for duplicate Presentation Contexts.

##### 4.2.3.4.1.3. SOP Specific Conformance for Verification SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

###### 4.2.3.4.1.3.1. Dataset Specific Conformance for Verification C-ECHO SCP

The DICOM command communication behavior is shown in the following table. The standard as well as the specific status codes and their corresponding behavior are also specified.

**Table 57: Status Response**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Confirmation | Message in log file. |

#### 4.2.3.4.2. (Real-World) Activity – Image Import

##### 4.2.3.4.2.1. Description and Sequencing of Activities

A remote system can sets up an association with IntelliSpace Cardiovascular. If IntelliSpace Cardiovascular has not reached already the maximum number of associations, IntelliSpace Cardiovascular will communicate with each remote system.
If suitable, IntelliSpace Cardiovascular will accept the association with a preferred presentation context. Then the remote system may transfer its instance data to IntelliSpace Cardiovascular. When the complete instance has been received, IntelliSpace Cardiovascular will send a C-STORE response to notify the remote system that the transfer is completed successfully and the remote system may release the association.
Next figure shows the Image Import functionality.

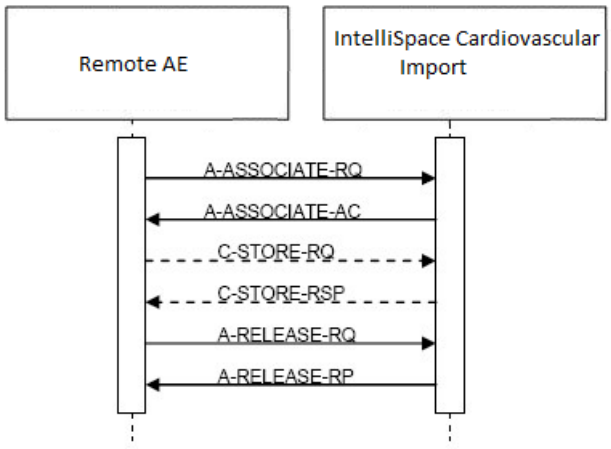


**Figure 15: (Real World) Activity - Image Import**

Note that only for configured systems some additional information can be configured, like institution-, department- and station - name, and whether the study must be archived or not.

##### 4.2.3.4.2.2. Accepted Presentation Contexts

The presentation contexts are defined in the next table.

**Table 58: Acceptable Presentation Contexts for (Real-World) Activity – Image Import**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Hardcopy Grayscale Image Storage (Retired) | 1.2.840.10008.5.1.1.29 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Hardcopy Color Image Storage (Retired) | 1.2.840.10008.5.1.1.30 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Computed Radiography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital X-Ray Image Storage - For Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital X-Ray Image Storage - For Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Mammography X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Mammography X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.2.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Intra-oral X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Intra-oral X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.3.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone Modality LUT Storage (Retired) | 1.2.840.10008.5.1.4.1.1.10 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Encapsulated PDF Storage | 1.2.840.10008.5.1.4.1.1.104.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone VOI LUT Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.11 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Grayscale Softcopy Presentation State Storage SOP Class | 1.2.840.10008.5.1.4.1.1.11.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Angiographic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| X-Ray Radiofluoroscopic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Angiographic Bi-Plane Image Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.12.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Positron Emission Tomography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.128 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone PET Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.129 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| CT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Nuclear Medicine Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.20 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Ultrasound Multi-frame Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Ultrasound Multi-frame Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.3.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| MR Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.4 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| RT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| RT Dose Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| RT Structure Set Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Ultrasound Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.6 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Ultrasound Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.6.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Raw Data Storage SOP Class | 1.2.840.10008.5.1.4.1.1.66 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Multi-frame Single Bit Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.1 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCP | None |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Multi-frame Grayscale Byte SC | 1.2.840.10008.5.1.4.1.1.7.2 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCP | None |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Image Storage SOP Class | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Multi-frame Grayscale Word SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.3 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCP | None |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Multi-frame True Color Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.4 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCP | None |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone Overlay Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.8 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Basic Text SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.11 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Enhanced SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.22 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Detail SR Storage - Trial (Retired) | 1.2.840.10008.5.1.4.1.1.88.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Comprehensive SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.33 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Radiation Dose SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.67 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.9 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| General ECG Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| SOP Class | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private X-Ray Image Storage | 1.3.46.670589.2.3.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private Reconstructed X-ray Storage | 1.3.46.670589.2.4.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private iE33 3D NEO Presentation State Subpage Storage | 1.3.46.670589.2.5.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum 3D Volume New Storage | 1.3.46.670589.5.0.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum MR Synthetic Image Storage | 1.3.46.670589.5.0.10 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum MR Cardio Analysis New Storage | 1.3.46.670589.5.0.11.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum CX Synthetic Image Storage | 1.3.46.670589.5.0.12 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum Perfusion Storage | 1.3.46.670589.5.0.13 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum Perfusion Analysis Storage | 1.3.46.670589.5.0.14 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum 3D Volume Object New Storage | 1.3.46.670589.5.0.2.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum Surface New Storage | 1.3.46.670589.5.0.3.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum MR Cardio New Storage | 1.3.46.670589.5.0.8.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum CT Synthetic Image Storage | 1.3.46.670589.5.0.9 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

The Import Image AE accepts all Presentation contexts listed in the above table. This means that the Import Image AE will accept multiple proposed Presentation Contexts with the same SOP Class but different Transfer Syntaxes, so there will be no checks for duplicate Presentation Contexts.

#### 4.2.3.4.2.3. SOP Specific Conformance for Storage SOP Classes

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

IntelliSpace Cardiovascular conforms to the SOP classes of the Storage Service Class. IntelliSpace Cardiovascular discards no data elements.

The instances received by IntelliSpace Cardiovascular are merged on Study UID and Series UID.
For ultrasound images only the Image Information Entity level is supported.

The following are the restrictions and exceptions for the normal behavior of the Image Import AE:

1. IntelliSpace Cardiovascular try to notify the external DICOM node about the reason for not accepting the connection and will be reported.
2. If no agreement between the two parties can be reached concerning (DICOM) communication parameters the connection will be closed and no data transfer will take place and this will be reported.
3. IntelliSpace Cardiovascular will close the connection if no data is received within 2 minutes after the setup and will be reported.
4. If a network error occurs during set up of a connection or during data transfer, this is reported. IntelliSpace Cardiovascular will abort the connection and data transfer will not be completed.
5. By errors during data transfer IntelliSpace Cardiovascular will notify the external DICOM node and closed the connection and will be reported.
6. DICOM Type 1 Attributes checked during storing of study objects:

**Table 59: DICOM Type 1 Attributes Checked During Storing of Study Objects**

| DICOM Attributes | Presence | Non Empty Value |
|---|---|---|
| Study Instance UID | Yes | Yes |
| Series Instance UID | Yes | Yes |
| SOP Class UID | Yes | Yes |
| SOP Instance UID | Yes | Yes |

The following attributes are checked as well for image objects:

**Table 60: DICOM Type 1 Attributes Checked During Storing of Image Objects**

| DICOM Attributes | Presence | Non Empty Value |
|---|---|---|
| Samples per pixel | Yes | Yes |
| Rows | Yes | Yes |
| Columns | Yes | Yes |
| Bits Allocated | Yes | Yes |
| Bits Stored | Yes | Yes |
| High Bit | Yes | Yes |
| Photometric Interpretation | Yes | Yes |
| Pixel Data | Yes | Yes |

If DICOM composite-object attributes are missing or empty then the system will:
a. Discard all data received for the associated objects.
b. Return an appropriate DICOM error message to the DICOM image system making the store request.

7. If an object received has the same DICOM SOP Instance UID as an object already stored on IntelliSpace Cardiovascular, IntelliSpace Cardiovascular will do either of the following:

- If the already stored object has the same UID's on instance, study and series level as the new one, IntelliSpace Cardiovascular will replace the stored object with the new object. This will not be communicated to the DICOM instance system, which will thus perceive this as a normal store.

OR

- Depending on the configuration setting "Send Study after Finalized State or Time our Expired" on the Archive page of the service tool, the following will be done. When the study has the status "finalize" and has the same requirements as the previous bullet point, the study will be discarded and will be communicated to the external DICOM node with the status "C-STORE_WARNING_ELEMENTS_DISCARDED"

- If the already stored object has a different study or series UID as the new one; IntelliSpace Cardiovascular will discard the object and send an error to the DICOM image system. The connection will remain open in order to allow the DICOM image system to recover from this error.

**Importing of DICOM Structure Reports.**

IntelliSpace Cardiovascular Image Import AE supports the DICOM Structured Reports from any DICOM nodes. IntelliSpace Cardiovascular uses the DICOM Structured Reports objects for displaying and reporting of the measurement values of the Adult Echocardiography Reports.

IntelliSpace Cardiovascular is multi-vendor compliance for Structured Reports.

#### 4.2.3.4.2.3.1. Dataset Specific Conformance for C-STORE-RSP

Detail regarding the Dataset Specific response behavior will be reported in this section.
This includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 61: C-STORE-RSP Status Response**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Success | Log: Continue |
| Refused | | Remote is not Licensed | Log; Abort association. |
| Warning | B006 | Elements Discarded (Duplicate instances) | SOP instance will be skipped. |
| Error | | Abort by remote System | Log. |
| | | Time-out reached | Log; Abort association. |
| | 0110 | Internal error IntelliSpace Cardiovascular | Send notification; Log; Abort association. |
| | A900 | Invalid dataset | Send notification; Log. |

**Table 62: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| Timeout | Time-out for reception is set fixed to 2 minutes. |

### 4.2.3.4.3. (Real-World) Activity – Storage Commitment Push Model AS SCP

#### 4.2.3.4.3.1. Description and Sequencing of Activities

**Normal Flow of events:**
1. Storage Commitment AE will initiate a request to the Storage Commitment SCP.

2. When a successful response from the Storage Commitment SCP is received, Storage Commitment AE marks this as correctly working Storage Commitment SCP.

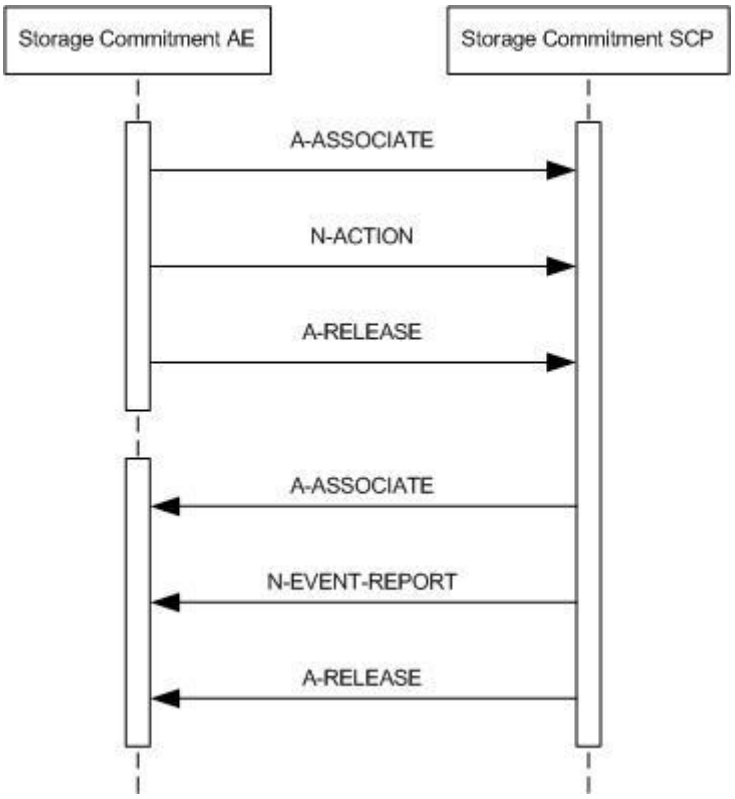


**Figure 16: (RWA) Storage Commitment SCP**

#### 4.2.3.4.3.2. Accepted Presentation Contexts

The presentation contexts are defined in the next table.

**Table 63: Acceptable Presentation Contexts for (Real-World) Activity – Storage Commitment Push Model AS SCP**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Storage Commitment Push Model SOP Class | 1.2.840.10008.1.20.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

#### 4.2.3.4.3.3. SOP Specific Conformance for Storage Commitment Push Model SOP Class

The Remote AE (Storage Commitment) provides standard conformance to the Storage Commitment Push Model SOP Class.

##### 4.2.3.4.3.3.1. Dataset Specific Conformance for Storage Commitment Push Model SOP Class N-EVENT-REPORT-SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 64: Storage Commitment attribute for N-EVENT-REPORT**

| Event Type Name | EVENT Type ID | Attribute Name | Tag | Commit |
|---|---|---|---|---|
| StorageCommitmentRequestSuccessful | 1 | Transaction UID | 0008,1195 | |
| | | Referenced SOP Sequence | 0008,1199 | |
| | | >Referenced SOP Class UID | 0008,1150 | |
| | | >Referenced SOP Instance UID | 0008,1155 | |
| StorageCommitmentRequestCompleteFailures Exist | 1 | Transaction UID | 0008,1195 | |
| | | Referenced SOP Sequence | 0008,1199 | |
| | | >Referenced SOP Class UID | 0008,1150 | |
| | | >Referenced SOP Instance UID | 0008,1155 | |
| | 2 | Transaction UID | 0008,1195 | |
| | | Failed SOP Sequence | 0008,1198 | |
| | | >Referenced SOP Class UID | 0008,1150 | |
| | | >Referenced SOP Instance UID | 0008,1155 | |
| | | >Failure Reason | 0008,1197 | |

On receiving a storage commitment result with Event Type ID 1 (Storage Commitment Request Successful) the Application Entity will mark these images as committed.
On receiving a storage commitment result with Event Type ID 2 (Storage Commitment Request Complete - Failures Exist) the Application Entity will behave as described in next table.

**Table 65: Storage Commitment N-EVENT-REPORT Failure Handling Behavior**

| Service Status | Error Code | Further Meaning | Description |
|---|---|---|---|
| Success | 0000 | conformation | Association will be released. The reason is logged. |
| Failure | xxxx | (any reason) | The reason is logged. |

**Table 66: Status Response**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Verification is complete | Successful received. |

#### 4.2.3.4.3.3.2. Dataset Specific Conformance for Storage Commitment Push Model SOP Class N-ACTION-SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.

**Table 67: Storage Commitment Attribute for N-ACTION-RSP**

| Attribute Name | Tag | Comment |
|---|---|---|
| **Storage Commitment Module** | | |
| Transaction UID | 0008,1195 | |
| Referenced SOP Sequence | 0008,1199 | |

Below the possible status Reponses for Storage commitment are listed:

**Table 68: Status Response**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | conformation | The association will be released. Reason is logged. |

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Failure | xxxx | (any failure) | The reason is logged. |

**Exceptions:**

1. After setting up the connection, if no data can be sent to IntelliSpace Cardiovascular before timeout, Remote AE aborts the connection and reports an error.
2. If an error or warning concerning data transfer is received from the target node during data transfer. If it is related to the data being send Remote AE tries to correct the cause of the error
3. When Remote AE cannot setup connection with the IntelliSpace Cardiovascular. Remote AE will retry to make connection. If it is still not possible to setup the connection, conforms its own retry mechanism, and warning will be reported.
4. When the Remote AE receives a storage commit response other than successful, the study will be re-archived, conforms to its own retry mechanism and a warning will be reported.

## 4.2.4. Print AE

Detail of this specific Application Entity is specified in this section.

### 4.2.4.1. SOP Classes

After the print job is selected, IntelliSpace Cardiovascular will initiate DICOM associations for the DICOM Basic Grayscale Printing Service and the DICOM Verification Service with the DICOM printer (SCP).
The print job with or without annotation is send to the printer. IntelliSpace Cardiovascular supports a maximum PDU size of 28KBytes.
The printer prints the print job and sends a successful response back to IntelliSpace Cardiovascular. IntelliSpace Cardiovascular shows this response on the system screen.

This Application Entity provides Standard Conformance to the following SOP Classes.

**Table 69: SOP Classes for Print AE**

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Print Job SOP Class | 1.2.840.10008.5.1.1.14 | Yes | No |
| Basic Annotation Box SOP Class | 1.2.840.10008.5.1.1.15 | Yes | No |
| Basic Grayscale Print Management Meta SOP Class | 1.2.840.10008.5.1.1.9 | Yes | No |
| >Basic Film Session SOP Class | 1.2.840.10008.5.1.1.1 | Yes | No |
| >Basic Film Box SOP Class | 1.2.840.10008.5.1.1.2 | Yes | No |
| >Basic Grayscale Image Box SOP Class | 1.2.840.10008.5.1.1.4 | Yes | No |
| >Printer SOP Class | 1.2.840.10008.5.1.1.16 | Yes | No |
| >Basic Annotation Box SOP Class | 1.2.840.10008.5.1.1.15 | Yes | No |

Any SOP specific behavior above is documented later in this conformance statement in the applicable SOP specific conformance section.

### 4.2.4.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

#### 4.2.4.2.1. General

The maximum PDU Size that the Print AE will use is not configurable.

The DICOM standard application context is specified below.

**Table 70: DICOM Application Context**

| Description | Value |
|---|---|
| Application Context Name | 1.2.840.10008.3.1.1.1 |

#### 4.2.4.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as an Initiator or Acceptor is specified here.
Print AE can have only one open connection at a given time.

**Table 71: Number of associations as an Association Initiator for this AE**

| Description | Value |
|---|---|
| Maximum number of simultaneous associations | 1 |

#### 4.2.4.2.3. Asynchronous Nature

The implementation supports negotiation of multiple outstanding transactions, along with the maximum number of outstanding transactions supported.

**Table 72: Asynchronous nature as an Association Initiator for this AE**

| Description | Value |
|---|---|
| Maximum number of outstanding asynchronous transactions | Not applicable |

#### 4.2.4.2.4. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

**Table 73: DICOM Implementation Class and Version for Print AE**

| | |
|---|---|
| Implementation Class UID | 1.3.46.670589.16.14.4.1.1 |
| Implementation Version Name | ISCV R1.1.L1 |

#### 4.2.4.2.5. Communication Failure Handling

The behavior of the AE during communication failure is summarized in the next table.

**Table 74: Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| ARTIM Timeout | The association is closed and the reason is logged. |

### 4.2.4.3. Association Initiation Policy

The Application Entity will respond on a received reject Association attempt as shown in next table.

**Table 75: Association Rejection response**

| Result | Source | Reason/Diagnosis | Behavior |
|---|---|---|---|
| 1 - rejected-permanent | 1 - DICOM UL service-user | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - application-context-name-not supported | The user is informed. Details are logged in central log file. |
| | | 3 - calling-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | | 7 - called-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | 2 - DICOM UL service-provider (ACSE related function) | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - protocol-version-not-supported | The user is informed. Details are logged in central log file. |
| | 3 - DICOM UL service-provider (Presentation related function) | 1 - temporary-congestion | The user is informed. Details are logged in central log file. |
| | | 2 - local-limit-exceeded | The user is informed. Details are logged in central log file. |

| Result | Source | Reason/Diagnosis | Behavior |
|---|---|---|---|
| 2 - rejected-transient | 1 - DICOM UL service-user | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - application-context-name-not-supported | The user is informed. Details are logged in central log file. |
| | | 3 - calling-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | | 7 - called-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | 2 - DICOM UL service-provider (ACSE related function) | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - protocol-version-not-supported | The user is informed. Details are logged in central log file. |
| | 3 - DICOM UL service-provider (Presentation related function) | 1 - temporary-congestion | The user is informed. Details are logged in central log file. |
| | | 2 - local-limit-exceeded | The user is informed. Details are logged in central log file. |

The behavior of the AE on receiving an association abort is summarized in the next table.

**Table 76: Association Abort Handling**

| Source | Reason/Diagnosis | Behavior |
|---|---|---|
| 0 - DICOM UL service-user (initiated abort) | 0 - reason-not-specified | When received, terminates the connection and logs the event. |
| 2 - DICOM UL service-provider (initiated abort) | 0 - reason-not-specified | When received, terminates the connection and logs the event. |
| | 1 - unrecognized-PDU | When received, terminates the connection and logs the event. |
| | 2 - unexpected-PDU | When received, terminates the connection and logs the event. |
| | 4 - unrecognized-PDU-parameter | When received, terminates the connection and logs the event. |
| | 5 - unexpected-PDU-parameter | When received, terminates the connection and logs the event. |
| | 6 - invalid-PDU-parameter-value | When received, terminates the connection and logs the event. |

#### 4.2.4.3.1. (Real-World) Activity – Print Management as SCU

##### 4.2.4.3.1.1. Description and Sequencing of Activities

The sequence of interactions between the IntelliSpace Cardiovascular Print AE and a remote printer AE to print one film sheet is presented as follows:

After the print job is selected on IntelliSpace Cardiovascular a connection with the DICOM printer will be made.
The print job consists of data describing the images and graphics to be printed as well as the requested layout and other parameters. One print job on the IntelliSpace Cardiovascular may result in a number of film sessions with the printer equal to the number of printed film sheets. Each film sheet within the print job is internally processed, converted to a STANDARD/1,1 page and then an association towards the remote Print Server is established and the page image is sent with or without annotation to the selected DICOM printer.

The printer prints the print job and sends a successful response back to the IntelliSpace Cardiovascular. The IntelliSpace Cardiovascular reports the success on the screen for the user.

Once the transmission of the film sheet is completed, the association with the printer is closed.

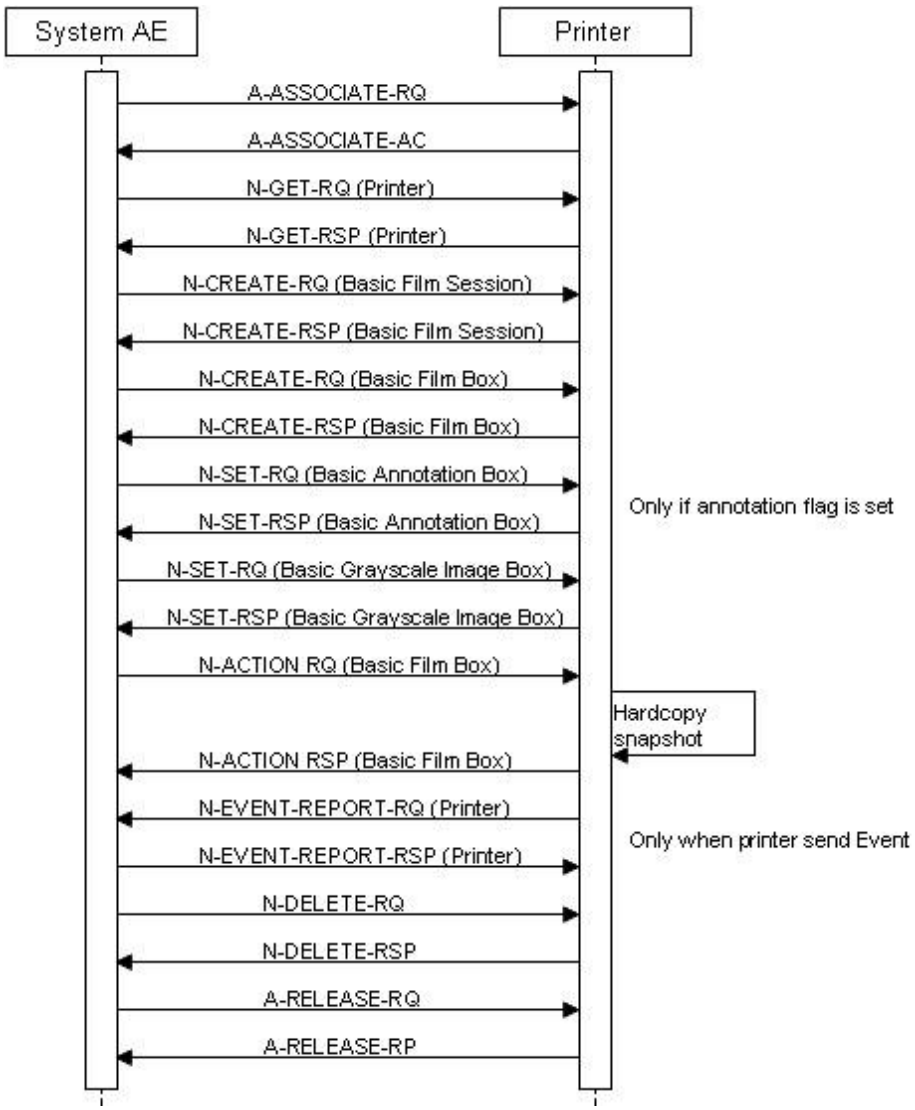


**Figure 17: (Real World) Activity - Print Management As SCU**

#### 4.2.4.3.1.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

**Table 77: Proposed Presentation Contexts for (Real-World) Activity – Print Management As SCU**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Print Job SOP Class | 1.2.840.10008.5.1.1.14 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Basic Annotation Box SOP Class | 1.2.840.10008.5.1.1.15 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Basic Grayscale Print Management Meta SOP Class | 1.2.840.10008.5.1.1.9 | | | SCU | None |
| >Basic Film Session SOP Class | 1.2.840.10008.5.1.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| >Basic Film Box SOP Class | 1.2.840.10008.5.1.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| >Basic Grayscale Image Box SOP Class | 1.2.840.10008.5.1.1.4 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| >Printer SOP Class | 1.2.840.10008.5.1.1.16 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

This section specifies each IOD created (including private IOD's).

Abbreviations used in the Module table for the column "Presence of Value" are:

| | |
|---|---|
| ALWAYS | The attribute is always present with a value |
| EMPTY | The attribute is always present without any value (attribute sent zero length) |
| VNAP | The attribute is always present and its Value is Not Always Present (attribute sent zero length if no value is present) |
| ANAP | The attribute is present under specified condition – if present then it will always have a value |
| VNAPCV | The attribute is present under specified condition – if present then its Value is Not Always Present (attribute sent zero length if condition applies and no value is present) |
| ANAPEV | The attribute is present under specified condition – if present then it will not have any value |

The abbreviations used in the Module table for the column "Source" are:

| | |
|---|---|
| AUTO | The attribute value is generated automatically |
| CONFIG | The attribute value source is a configurable parameter |
| COPY | The attribute value source is another SOP instance |
| FIXED | The attribute value is hard-coded in the application |
| IMPLICIT | The attribute value source is a user-implicit setting |
| MPPS | The attribute value is the same as that use for Modality Performed Procedure Step |
| MWL | The attribute value source is a Modality Worklist |
| USER | The attribute value source is explicit user input |

#### 4.2.4.3.1.3. SOP Specific Conformance for Basic Film Session SOP Class of the Basic Grayscale Print Management Meta SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

**Exceptions:**
The print job cannot be completed by the printer:

1. Printer errors are handled as given in the next table.
2. DICOM transfer errors to the printer are treated as normal DICOM transfer errors and are recorded appropriately.

3. The printer can use the Basic Annotation Box SOP Class when the annotation flag is set. A control on the SOP Classes during setup of the Association is used to check of the printer known this SOP Class.

**Table 78: DICOM Command Response Status Handling Behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Success | Log; Continue. |
| Warning/Failure | <>0000 | (any warning/failure) | Log; Continue. |
| Error | <>0000 | (any error) | Log; Abort. |

#### 4.2.4.3.1.3.1. Dataset Specific Conformance for Basic Film Session SOP Class N-CREATE-SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

**Table 79: Basic Film Session Presentation Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Number of Copies | 2000,0010 | IS | | ANAP | USER | - |
| Print Priority | 2000,0020 | CS | | ANAP | USER | - |

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 80: DICOM command response status handling behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Film Session successfully created | The print job continues. |
| Warning | B600 | Memory Allocation not supported | The print job continues and the warning is logged. |

**Table 81: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| ARTIM Time-out | Print job Fails |
| Reply Time-out | The association is rejected. |
| Association Time-out SCU | The association is released. |
| Association aborted | The Print job is marked as failed. The reason is logged and reported to the user. |

#### 4.2.4.3.1.4. SOP Specific Conformance for Print Job SOP Class of the

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

**Exceptions:**
The print job cannot be completed by the printer:

1. Printer errors are handled as given in the next table.
2. DICOM transfer errors to the printer are treated as normal DICOM transfer errors and are recorded appropriately.
3. The printer can use the Basic Annotation Box SOP Class when the annotation flag is set. A control on the SOP Classes during setup of the Association is used to check of the printer known this SOP Class.

**Table 82: DICOM Command Response Status Handling Behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Success | Log; Continue. |
| Warning/Failure | <>0000 | (any warning/failure) | Log; Continue. |
| Error | <>0000 | (any error) | Log; Abort. |

#### 4.2.4.3.1.4.1. Dataset Specific Conformance for Print Job N-EVENT-REPORT SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

IntelliSpace Cardiovascular does not respond to N-EVENT-REPORT from the Printer.

**Note:**
N-EVENT-REPORT is an asynchronous message from the printer in situations such as no film supply, low cartridge, print door opened, etc. IntelliSpace Cardiovascular does not handle this and responds with either ABORT or releasing the association. On the User Interface the Print Job is displayed as failed and the user needs to resend the image.

#### 4.2.4.3.1.5. SOP Specific Conformance for Basic Annotation Box SOP Class of the

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

**Exceptions:**
The print job cannot be completed by the printer:

1. Printer errors are handled as given in the next table.
2. DICOM transfer errors to the printer are treated as normal DICOM transfer errors and are recorded appropriately.
3. The printer can use the Basic Annotation Box SOP Class when the annotation flag is set. A control on the SOP Classes during setup of the Association is used to check of the printer known this SOP Class.

**Table 83: DICOM Command Response Status Handling Behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Success | Log; Continue |
| Warning/Failure | <>0000 | (any warning/failure) | Log; Continue. |
| Error | <>0000 | (any error) | Log; Abort. |

#### 4.2.4.3.1.5.1. Dataset Specific Conformance for Basic Annotation Box SOP Class N-SET-SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

**Table 84: Basic Annotation Presentation Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Annotation Position | 2030,0010 | US | | ALWAYS | AUTO | - |
| Text String | 2030,0020 | LO | | ALWAYS | AUTO | Contains Patient Name (0010,0010). |

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 85: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| Timeout | The association is closed and the reason is logged. |
| Association aborted | The association is closed and the reason is logged. |

#### 4.2.4.3.1.6. SOP Specific Conformance for Printer SOP Class of the Basic Grayscale Print Management Meta SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

**Exceptions:**
The print job cannot be completed by the printer:

1. Printer errors are handled as given in the next table.
2. DICOM transfer errors to the printer are treated as normal DICOM transfer errors and are recorded appropriately.
3. The printer can use the Basic Annotation Box SOP Class when the annotation flag is set. A control on the SOP Classes during setup of the Association is used to check of the printer known this SOP Class.

**Table 86: DICOM Command Response Status Handling Behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Success | |
| Warning/Failure | <>0000 | (any warning/failure) | Log; Continue. |
| Error | <>0000 | (any error) | Log; Abort. |

##### 4.2.4.3.1.6.1. Dataset Specific Conformance for Printer SOP Class N-EVENT-REPORT-SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.

IntelliSpace Cardiovascular does not respond to N-EVENT-REPORT from the Printer.

**Note:**
N-EVENT-REPORT is an asynchronous message from the printer in situations such as no film supply, low cartridge, print door opened, etc. IntelliSpace Cardiovascular does not handle this and responds with either ABORT or releasing the association. On the User Interface the Print Job is displayed as failed and the user needs to resend the image.

##### 4.2.4.3.1.6.2. Dataset Specific Conformance for Printer SOP Class N-GET-SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

**Table 87: Printer Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Manufacturer | 0008,0070 | LO | | ALWAYS | AUTO | - |
| Manufacturer's Model Name | 0008,1090 | LO | | ALWAYS | AUTO | - |
| Device Serial Number | 0018,1000 | LO | | ALWAYS | AUTO | - |
| Software Version(s) | 0018,1020 | LO | | ALWAYS | AUTO | - |
| Date of Last Calibration | 0018,1200 | DA | | ALWAYS | AUTO | - |
| Time of Last Calibration | 0018,1201 | TM | | ALWAYS | AUTO | - |
| Printer Status | 2110,0010 | CS | | ALWAYS | AUTO | - |
| Printer Name | 2110,0030 | LO | | ALWAYS | AUTO | - |

#### 4.2.4.3.1.7. SOP Specific Conformance for Basic Film Box SOP Class of the Basic Grayscale Print Management Meta SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

The Print AE conforms to the Basic Film Box SOP Class. No data elements are discarded or coerced by the Print AE.

**Exceptions:**
The print job cannot be completed by the printer:

1. Printer errors are handled as given in the next table.
2. DICOM transfer errors to the printer are treated as normal DICOM transfer errors and are recorded appropriately.
3. The printer can use the Basic Annotation Box SOP Class when the annotation flag is set. A control on the SOP Classes during setup of the Association is used to check of the printer known this SOP Class.

**Table 88: DICOM Command Response Status Handling Behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Success | Log; Continue |
| Warning/Failure | <>0000 | (any warning/failure) | Log; Continue. |
| Error | <>0000 | (any error) | Log; Abort. |

##### 4.2.4.3.1.7.1. Dataset Specific Conformance for Basic Film Box SOP Class N-CREATE-SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

**Table 89: Basic Film Box Presentation Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Image Display Format | 2010,0010 | ST | STANDARD,<br>Value 2: 1,1, 1,2, 2,1, 2,2, 2,3, 3,2, 3,3, 3,4, 3,5, 4,4, 4,5, 4,6 | ALWAYS | AUTO | - |
| Annotation Display Format ID | 2010,0030 | CS | ANNOTATION | ALWAYS | AUTO | - |
| Film Orientation | 2010,0040 | CS | LANDSCAPE, PORTRAIT | ALWAYS | AUTO | - |

**Table 90: Basic Film Box Relationship Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Referenced Film Session Sequence | 2010,0500 | SQ | | ALWAYS | AUTO | - |
| >Referenced SOP Class UID | 0008,1150 | UI | | ALWAYS | AUTO | - |
| >Referenced SOP Instance UID | 0008,1155 | UI | | ALWAYS | AUTO | - |

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 91: DICOM command response status handling behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Film Box successfully created | The print job continues. |

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Warning | B605 | Requested Min Density or Max Density outside of Printer's operating Range | The print job continues and the warning is logged. |
| Failure | C616 | There is an existing Film Box that has not been printed | The print job is marked as failed and the reason is logged. |

**Table 92: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| ARTIM Time-out | Print job Fails. |
| Reply Time-out | The association is rejected. |
| Association Time-out SCU | The association is released. |
| Association aborted | The Print job is marked as failed. The reason is logged and reported to the user. |

#### 4.2.4.3.1.7.2. Dataset Specific Conformance for Basic Film Box SOP Class N-ACTION-SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 93: DICOM command response status handling behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Film accepted for printing | The print job continues. |
| Warning | B603 | Film Box SOP Instance Hierarchy does not contain Image Box SOP Instances | The print job continues and the warning is logged and reported to the user. |
| | B604 | Image Size is larger than Image Box Size – The Image has been de-magnified | The print job continues and the warning is logged and reported to the user. |
| | B609 | Image Size is larger than Image Box Size – The Image has been cropped to fit | The print job continues and the warning is logged and reported to the user. |
| | B60A | Image Size or combined Print Image Size is larger than Image Box Size – The Image or combined Print Image has been decimated to fit | The print job continues and the warning is logged and reported to the user. |
| Failure | C602 | Unable to create Print Job SOP Instance – Print Queue is full | The print job is marked as failed and the reason is logged and reported to the user. |
| | C603 | Image Size is larger than Image Box Size | The print job is marked as failed and the reason is logged and reported to the user. |
| | C613 | Combined Print Image Size is larger than Image Box Size | The print job is marked as failed and the reason is logged and reported to the user. |

**Table 94: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| ARTIM Time-out | Print job Fails |
| Reply Time-out | The association is rejected |
| Association Time-out SCU | The association is released. |
| Association aborted | The Print job is marked as failed. The reason is logged and reported to the user. |

#### 4.2.4.3.1.8. SOP Specific Conformance for Basic Grayscale Image Box SOP Class of the Basic Grayscale Print Management Meta SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

The Print AE conforms to the Basic Grayscale Image Box SOP Class. No data elements are discarded or coerced by the Print AE.

**Exceptions:**
The print job cannot be completed by the printer:

1. Printer errors are handled as given in the next table.
2. DICOM transfer errors to the printer are treated as normal DICOM transfer errors and are recorded appropriately.
3. The printer can use the Basic Annotation Box SOP Class when the annotation flag is set. A control on the SOP Classes during setup of the Association is used to check of the printer known this SOP Class.

**Table 95: DICOM Command Response Status Handling Behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Success | Log; Continue |
| Warning/Failure | <>0000 | (any warning/failure) | Log; Continue. |
| Error | <>0000 | (any error) | Log; Abort. |

##### 4.2.4.3.1.8.1. Dataset Specific Conformance for Basic Grayscale Image Box SOP Class N-SET-SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

**Table 96: Image Box Pixel Presentation Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Image Box Position | 2020,0010 | US | | ALWAYS | AUTO | - |
| Basic Grayscale Image Sequence | 2020,0110 | SQ | | ALWAYS | AUTO | - |
| >Samples per Pixel | 0028,0002 | US | 1 | ALWAYS | AUTO | - |
| >Photometric Interpretation | 0028,0004 | CS | MONOCHROME2 | ALWAYS | AUTO | - |
| >Planar Configuration | 0028,0006 | US | | ANAP | CONFIG | Additional attribute. |
| >Rows | 0028,0010 | US | | ALWAYS | AUTO | - |
| >Columns | 0028,0011 | US | | ALWAYS | AUTO | - |
| >Pixel Aspect Ratio | 0028,0034 | IS | Value 1: 1\1 | ALWAYS | AUTO | - |
| >Bits Allocated | 0028,0100 | US | 8 | ALWAYS | AUTO | - |
| >Bits Stored | 0028,0101 | US | 8 | ALWAYS | AUTO | - |
| >High Bit | 0028,0102 | US | 7 | ALWAYS | AUTO | - |
| >Pixel Representation | 0028,0103 | US | 0 | ALWAYS | AUTO | - |
| >Window Center | 0028,1050 | DS | | ANAP | CONFIG | Additional attribute. |
| >Window Width | 0028,1051 | DS | | ANAP | CONFIG | Additional attribute. |
| >Pixel Data | 7FE0,0010 | OW/OB | | ALWAYS | AUTO | - |

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 97: DICOM command response status handling behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Image successfully stored in Image Box | The print job continues. |

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Warning | B604 | Image Size is larger than Image Box Size – The Image has been de-magnified | The print job continues and the warning is logged and reported to the user. |
| | B605 | Requested Min Density or Max Density outside of Printer's operating Range | The print job continues and the warning is logged and reported to the user. |
| | B609 | Image Size is larger than Image Box Size – The Image has been cropped to fit | The print job continues and the warning is logged and reported to the user. |
| | B60A | Image Size or combined Print Image Size is larger than Image Box Size – The Image or combined Print Image has been decimated to fit | The print job continues and the warning is logged and reported to the user. |
| Error | C603 | Image Size is larger than Image Box Size | The print job is marked as failed and the reason is logged and reported to the user. |
| | C605 | Insufficient Memory in Printer to store the Image | The print job is marked as failed and the reason is logged and reported to the user. |
| | C613 | Combined Print Image Size is larger than Image Box Size | The print job is marked as failed and the reason is logged and reported to the user. |

**Table 98: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| ARTIM Time-out | Print job Fails |
| Reply Time-out | The association is rejected. |
| Association Time-out SCU | The association is released. |
| Association aborted | The Print job is marked as failed. The reason is logged and reported to the user. |

#### 4.2.4.4. Association Acceptance Policy

Not applicable, Print AE does not accept any associations.

## 4.2.5. Query Retrieve as SCP AE

Detail of this specific Application Entity is specified in this section.

### 4.2.5.1. SOP Classes

The Query/Retrieve SCP AE is used for handling incoming Query/Retrieve requests. The actual sending of DICOM Instances (images, objects) from IntelliSpace Cardiovascular Server to remote system is handled by another AE. The Query/Retrieve SCP AE makes use of the following DICOM functions:

- Verification as SCP, which uses C-ECHO service element.
- Query as SCP, which uses C-FIND as service element.
- Retrieve as SCP, which uses C-MOVE as service element.
- Patient / Study are always updates with the latest information for the exported studies. (Refer to the tables in section 4.2.5.3.2.4 for the list of updated patient and study attributes)

This Application Entity provides Standard Conformance to the following SOP Classes.

**Table 99: SOP Classes for Query Retrieve as SCP AE**

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Verification SOP Class | 1.2.840.10008.1.1 | No | Yes |
| Hardcopy Grayscale Image Storage (Retired) | 1.2.840.10008.5.1.1.29 | Yes | No |
| Hardcopy Color Image Storage (Retired) | 1.2.840.10008.5.1.1.30 | Yes | No |
| Computed Radiography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.1 | Yes | No |
| Digital X-Ray Image Storage - For Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.1 | Yes | No |
| Digital X-Ray Image Storage - For Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.1.1 | Yes | No |
| Digital Mammography X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.2 | Yes | No |
| Digital Mammography X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.2.1 | Yes | No |
| Digital Intra-oral X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.3 | Yes | No |
| Digital Intra-oral X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.3.1 | Yes | No |
| Standalone Modality LUT Storage (Retired) | 1.2.840.10008.5.1.4.1.1.10 | Yes | No |
| Encapsulated PDF Storage | 1.2.840.10008.5.1.4.1.1.104.1 | Yes | No |
| Grayscale Softcopy Presentation State Storage SOP Class | 1.2.840.10008.5.1.4.1.1.11.1 | Yes | No |
| Color Softcopy Presentation State Storage SOP Class | 1.2.840.10008.5.1.4.1.1.11.2 | Yes | No |
| X-Ray Angiographic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.1 | Yes | No |
| X-Ray Radiofluoroscopic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.2 | Yes | No |
| X-Ray Angiographic Bi-Plane Image Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.12.3 | Yes | No |
| Positron Emission Tomography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.128 | Yes | No |
| Standalone PET Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.129 | Yes | No |
| CT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.2 | Yes | No |
| Nuclear Medicine Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.20 | Yes | No |
| Ultrasound Multi-frame Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.3 | Yes | No |
| Ultrasound Multi-frame Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.3.1 | Yes | No |
| MR Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.4 | Yes | No |
| RT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.1 | Yes | No |
| RT Dose Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.2 | Yes | No |
| RT Structure Set Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.3 | Yes | No |
| RT Plan Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.5 | Yes | No |

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Ultrasound Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.6 | Yes | No |
| Ultrasound Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.6.1 | Yes | No |
| Raw Data Storage SOP Class | 1.2.840.10008.5.1.4.1.1.66 | Yes | No |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 | Yes | No |
| Multi-frame Single Bit Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.1 | Yes | No |
| Multi-frame Grayscale Byte SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.2 | Yes | No |
| Multi-frame Grayscale Word SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.3 | Yes | No |
| Multi-frame True Color Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.4 | Yes | No |
| Standalone Overlay Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.8 | Yes | No |
| Basic Text SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.11 | Yes | No |
| Enhanced SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.22 | Yes | No |
| Detail SR Storage - Trial (Retired) | 1.2.840.10008.5.1.4.1.1.88.3 | Yes | No |
| Comprehensive SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.33 | Yes | No |
| X-Ray Radiation Dose SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.67 | Yes | No |
| Standalone Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.9 | Yes | No |
| General ECG Waveform Storage SOP Class | 1.2.840.10008.5.1.4.1.1.9.1.2 | Yes | No |
| Patient Root QR Information Model - FIND SOP Class | 1.2.840.10008.5.1.4.1.2.1.1 | No | Yes |
| Patient Root QR Information Model - MOVE SOP Class | 1.2.840.10008.5.1.4.1.2.1.2 | No | Yes |
| Study Root QR Information Model - FIND SOP Class | 1.2.840.10008.5.1.4.1.2.2.1 | No | Yes |
| Study Root QR Information Model - MOVE SOP Class | 1.2.840.10008.5.1.4.1.2.2.2 | No | Yes |
| PatientStudy Only QR Info. Model - FIND SOP Class (Retired) | 1.2.840.10008.5.1.4.1.2.3.1 | No | Yes |
| PatientStudy Only QR Info. Model - MOVE SOP Class (Retired) | 1.2.840.10008.5.1.4.1.2.3.2 | No | Yes |
| Philips Private X-Ray Image Storage | 1.3.46.670589.2.3.1.1 | Yes | No |
| Philips Private Reconstructed X-ray Storage | 1.3.46.670589.2.4.1.1 | Yes | No |
| Philips Private iE33 3D NEO Presentation State Subpage Storage | 1.3.46.670589.2.5.1.1 | Yes | No |
| Philips Private ViewForum 3D Volume New Storage | 1.3.46.670589.5.0.1.1 | Yes | No |
| Philips Private ViewForum MR Synthetic Image Storage | 1.3.46.670589.5.0.10 | Yes | No |
| Philips Private ViewForum MR Cardio Analysis New Storage | 1.3.46.670589.5.0.11.1 | Yes | No |
| Philips Private ViewForum CX Synthetic Image Storage | 1.3.46.670589.5.0.12 | Yes | No |
| Philips Private ViewForum Perfusion Storage | 1.3.46.670589.5.0.13 | Yes | No |
| Philips Private ViewForum Perfusion Analysis Storage | 1.3.46.670589.5.0.14 | Yes | No |
| Philips Private ViewForum 3D Volume Object New Storage | 1.3.46.670589.5.0.2.1 | Yes | No |
| Philips Private ViewForum Surface New Storage | 1.3.46.670589.5.0.3.1 | Yes | No |
| Philips Private ViewForum MR Cardio New Storage | 1.3.46.670589.5.0.8.1 | Yes | No |
| Philips Private ViewForum CT Synthetic Image Storage | 1.3.46.670589.5.0.9 | Yes | No |

Note: Any SOP specific behavior is documented later in the conformance statement in the applicable SOP specific conformance section.

#### 4.2.5.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

##### 4.2.5.2.1. General

The DICOM standard application context is specified below.

**Table 100: DICOM Application Context**

| Description | Value |
|---|---|
| Application Context Name | 1.2.840.10008.3.1.1.1 |

#### 4.2.5.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as an Initiator or Acceptor is specified here.

The number of associations that Query Retrieve SCP AE can handle is up to 10. For the verification service at least one association can be handled simultaneously. The Query Retrieve SCP AE will only accept DICOM associations from other DICOM nodes whose AE titles are listed in the IntelliSpace Cardiovascular configuration files. The storage part of the Query Retrieve SCP function can handle maximum of 5 associations simultaneously.

**Table 101: Number of associations as an Association Initiator for this AE (C-STORE)**

| Description | Value |
|---|---|
| Maximum number of simultaneous associations | 5 |

**Table 102: Number of associations as an Association Acceptor for this AE (C-FIND, C-MOVE)**

| Description | Value |
|---|---|
| Maximum number of simultaneous associations | 5 |

**Table 103: Number of associations as an Association Acceptor for this AE (C-ECHO)**

| Description | Value |
|---|---|
| Maximum number of simultaneous associations | 1 |

#### 4.2.5.2.3. Asynchronous Nature

The implementation supports negotiation of multiple outstanding transactions, along with the maximum number of outstanding transactions supported.

**Table 104: Asynchronous nature as an Association Initiator for this AE**

| Description | Value |
|---|---|
| Maximum number of outstanding asynchronous transactions | Not applicable |

#### 4.2.5.2.4. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

**Table 105: DICOM Implementation Class and Version for Query Retrieve as SCP AE**

| | |
|---|---|
| Implementation Class UID | 1.3.46.670589.16.14.4.1.1 |
| Implementation Version Name | ISCV R1.1.L1 |

#### 4.2.5.2.5. Communication Failure Handling

The behavior of the AE during communication failure is summarized in the next table.

**Table 106: Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| ARTIM Timeout | The association is released and the reason is logged. |

#### 4.2.5.3. Association Initiation Policy

The Application Entity will respond on a received reject Association attempt as shown in next table.

**Table 107: Association Rejection response**

| Result | Source | Reason/Diagnosis | Behavior |
|---|---|---|---|
| 1 - rejected-permanent | 1 - DICOM UL service-user | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - application-context-name-not supported | The user is informed. Details are logged in central log file. |
| | | 3 - calling-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | | 7 - called-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | 2 - DICOM UL service-provider (ACSE related function) | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - protocol-version-not-supported | The user is informed. Details are logged in central log file. |
| | 3 - DICOM UL service-provider (Presentation related function) | 1 - temporary-congestion | The user is informed. Details are logged in central log file. |
| | | 2 - local-limit-exceeded | The user is informed. Details are logged in central log file. |
| 2 - rejected-transient | 1 - DICOM UL service-user | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - application-context-name-not-supported | The user is informed. Details are logged in central log file. |
| | | 3 - calling-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | | 7 - called-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | 2 - DICOM UL service-provider (ACSE related function) | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - protocol-version-not-supported | The user is informed. Details are logged in central log file. |
| | 3 - DICOM UL service-provider (Presentation related function) | 1 - temporary-congestion | The user is informed. Details are logged in central log file. |
| | | 2 - local-limit-exceeded | The user is informed. Details are logged in central log file. |

The behavior of the AE on receiving an association abort is summarized in the next table.

**Table 108: Association Abort Handling**

| Source | Reason/Diagnosis | Behavior |
|---|---|---|
| 0 - DICOM UL service-user (initiated abort) | 0 - reason-not-specified | When received, terminates the connection and logs the event. |
| 2 - DICOM UL service-provider (initiated abort) | 0 - reason-not-specified | When received, terminates the connection and logs the event. |

| Source | Reason/Diagnosis | Behavior |
|---|---|---|
| | 1 - unrecognized-PDU | When received, terminates the connection and logs the event. |
| | 2 - unexpected-PDU | When received, terminates the connection and logs the event. |
| | 4 - unrecognized-PDU-parameter | When received, terminates the connection and logs the event. |
| | 5 - unexpected-PDU-parameter | When received, terminates the connection and logs the event. |
| | 6 - invalid-PDU-parameter-value | When received, terminates the connection and logs the event. |

#### 4.2.5.3.1. (Real-World) Activity – Image Export

##### 4.2.5.3.1.1. Description and Sequencing of Activities

**Normal flow of events:**
1. IntelliSpace Cardiovascular accepts the set up request of the remote node. Once the connection has been set up IntelliSpace Cardiovascular receives the query request. In response IntelliSpace Cardiovascular will send (0 of more) queues in the result. The connection will be closed.
2. A new connection will be set up for the retrieve request. If request was successful an association with the store remote node will be set up.
3. The requested data will be sending to the store remote node
4. Connection with the store remote node and the request retrieve node will be closed.
5. Patient Study data will be updated with the latest information. (Refer to the tables in section 4.2.1.3.3.3 for the list of updated patient and study attributes.)

After the C-MOVE request the Query/Retrieve as SCP (C-STORE) will only export the requested instances.
IntelliSpace Cardiovascular send these instances intermediate during the C-MOVE responses or not intermediate than the C-MOVE status "PENDING" is sending to the Remote AE.

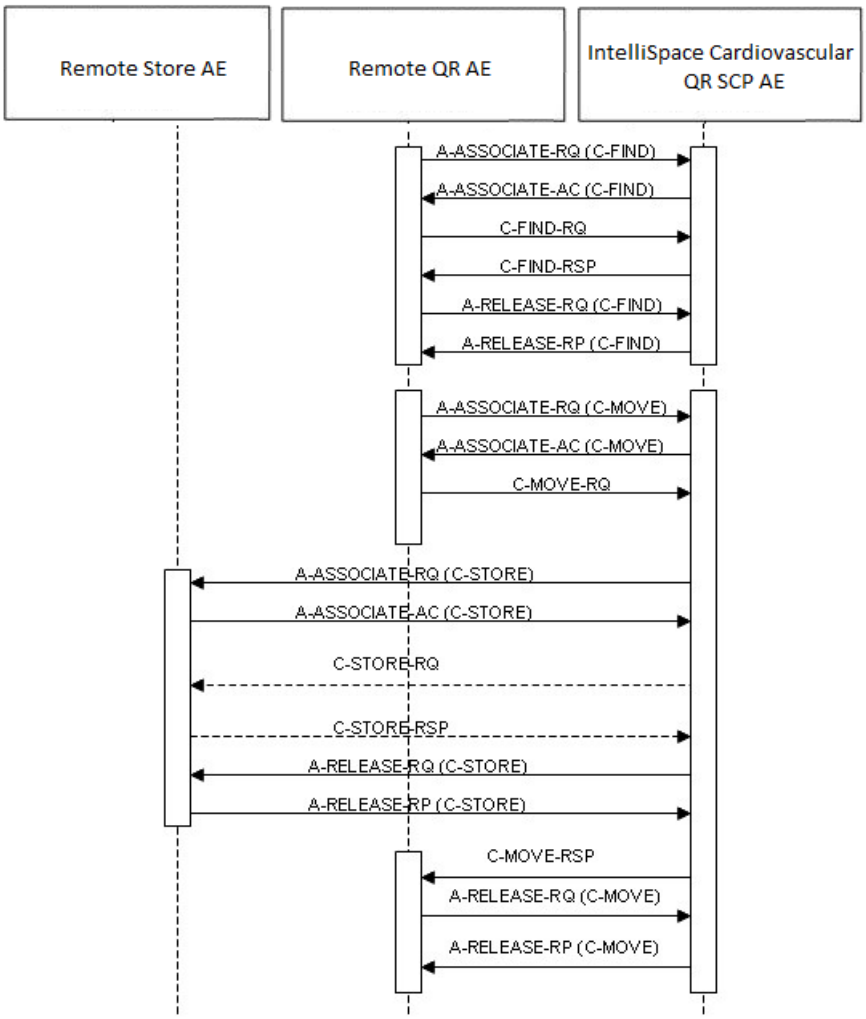


**Figure 18: (Real World) Activity - Image Export**

#### 4.2.5.3.1.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

**Table 109: Proposed Presentation Contexts for (Real-World) Activity – Image Export**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Hardcopy Grayscale Image Storage (Retired) | 1.2.840.10008.5.1.1.29 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Hardcopy Color Image Storage (Retired) | 1.2.840.10008.5.1.1.30 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Computed Radiography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital X-Ray Image Storage - For Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital X-Ray Image Storage - For Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Mammography X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Mammography X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.2.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Intra-oral X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Intra-oral X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.3.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone Modality LUT Storage (Retired) | 1.2.840.10008.5.1.4.1.1.10 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Encapsulated PDF Storage | 1.2.840.10008.5.1.4.1.1.104.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Grayscale Softcopy Presentation State Storage SOP Class | 1.2.840.10008.5.1.4.1.1.11.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Color Softcopy Presentation State Storage SOP Class | 1.2.840.10008.5.1.4.1.1.11.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Angiographic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.1 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Radiofluoroscopic Image | 1.2.840.10008.5.1.4.1.1.12.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Storage SOP Class | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Angiographic Bi-Plane Image Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.12.3 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Positron Emission Tomography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.128 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone PET Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.129 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| CT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Nuclear Medicine Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.20 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Ultrasound Multi-frame Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.3 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Ultrasound Multi-frame Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.3.1 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| MR Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.4 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| RT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| **Abstract Syntax** | | **Transfer Syntax** | | **Role** | **Extended Negotiation** |
| **Name** | **UID** | **Name List** | **UID List** | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| RT Dose Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| RT Structure Set Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| RT Plan Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.5 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Ultrasound Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.6 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Ultrasound Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.6.1 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Raw Data Storage SOP Class | 1.2.840.10008.5.1.4.1.1.66 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Multi-frame Single Bit Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.1 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Multi-frame Grayscale Byte SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Multi-frame Grayscale Word SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Multi-frame True Color Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.4 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Standalone Overlay Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.8 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Basic Text SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.11 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Enhanced SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.22 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Detail SR Storage - Trial (Retired) | 1.2.840.10008.5.1.4.1.1.88.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Comprehensive SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.33 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Radiation Dose SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.67 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| **Abstract Syntax** | | **Transfer Syntax** | | **Role** | **Extended Negotiation** |
| **Name** | **UID** | **Name List** | **UID List** | | |
| Standalone Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.9 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| General ECG Waveform Storage SOP Class | 1.2.840.10008.5.1.4.1.1.9.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private X-Ray Image Storage | 1.3.46.670589.2.3.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private Reconstructed X-ray Storage | 1.3.46.670589.2.4.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private iE33 3D NEO Presentation State Subpage Storage | 1.3.46.670589.2.5.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum 3D Volume New Storage | 1.3.46.670589.5.0.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum MR Synthetic Image Storage | 1.3.46.670589.5.0.10 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum MR Cardio Analysis New Storage | 1.3.46.670589.5.0.11.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum CX Synthetic Image Storage | 1.3.46.670589.5.0.12 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum Perfusion Storage | 1.3.46.670589.5.0.13 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum Perfusion Analysis Storage | 1.3.46.670589.5.0.14 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum 3D Volume Object New Storage | 1.3.46.670589.5.0.2.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum Surface New Storage | 1.3.46.670589.5.0.3.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum MR Cardio New Storage | 1.3.46.670589.5.0.8.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum CT Synthetic Image Storage | 1.3.46.670589.5.0.9 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

#### 4.2.5.3.1.3. SOP Specific Conformance for Storage SOP Classes

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

Not mentioned SOP classes are also supported, but only with the stored transfer syntax. This implies that not mentioned SOP classes are handled in such manner that what comes in will be sent out.

- The DICOM Store SCU exports the same attribute values as were imported into IntelliSpace Cardiovascular.
- The DICOM Store SCU updates the patient study with the latest information.
- The DICOM Store SCU supports all transfer syntaxes that are supported by DICOM import.
- The DICOM Store SCU supports conversion of transfer syntax (must be prepared to do a conversion from the transfer syntax in which the data is stored to the transfer syntax which is negotiated with the remote DICOM Store SOP Specific Conformance for SOP Classes.
- Only the DICOM instances of services where both parties agreed upon are stored, this will be reported.

##### 4.2.5.3.1.3.1. Dataset Specific Conformance for C-STORE-RQ

Detail regarding the Dataset Specific response behavior will be reported in this section.
This includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

The possible status response during the C-STORE-SCU request are listed here:

**Table 110: DICOM command response status handling behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Successful stored | Log; Continue. |
| Refused | A700 | Refused: Out of Resources | Log; Continue. |
| Error | 0110 | Error: Processing Failure | Log; Continue. |
| | A900 | Error: Data Set does not match SOP Class | Log; Continue. |
| | C000 | Error: cannot understand | Log; Continue. |
| Warning | B000 | Coercion of Data Elements | Log; Continue. |
| | B007 | Data Set does not match SOP Class | Log; Continue. |
| | B006 | Elements Discarded | Log; Continue. |

Next table shows the possible Communication Failure during C-STORE request.

**Table 111: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| Timeout | The association released and the reason is logged. |
| Association aborted. | The association released and the reason is logged. |

**Exceptions:**
1. If, after setting up the connection, no data can be sent to the external DICOM node for 2 minutes, IntelliSpace Cardiovascular will retry once and then it will abort the connection and reports error
2. If an error occurs on IntelliSpace Cardiovascular while setting up the connection, IntelliSpace Cardiovascular will abort the connection and reports an error
3. If an error occurs on the external DICOM node while setting up the connection, IntelliSpace Cardiovascular will abort all actions related to that connection and reports an error.
4. If no agreement between the two parties can be reached concerning communication parameters the connection will be closed and no data transfer will take place. IntelliSpace Cardiovascular reports an error.
5. When a network error occurs during connection set up or during data transfer, IntelliSpace Cardiovascular will abort all actions related to the connection and reports and error.

During DICOM based store, transfer negotiations may indicate that the original format of the data is not accepted by the target node. In such cases, the remote store server will try to apply one of the transfer syntax conversions indicated by '+', in order to get to transfer syntax that is supported by the external system. The Transfer syntax conversion is supported from SCU to SCP.

| Source Syntax | Destination Syntax | | |
|---|---|---|---|
| | ILE | ELE | EBE |
| ILE | - | + | + |
| ELE | + | - | + |
| EBE | + | + | - |
| JPEG Baseline | - | - | - |
| JPEG Lossless FOP Non-Hierarchical 14 | + | + | + |
| RLE | + | + | + |

**Figure 19: Transfer Syntax Conversion from Source to Destination**

The Archive AE conforms to the SOP classes of the Storage Service Class. No data elements are discarded or coerced by the Archive AE.

The list of updated patient and study attributes are mentioned in the tables below.

**Table 112: List of updated Patient Attributes**

| Attribute | DICOM Tag |
|---|---|
| Last Name | Part of (0010,0010) |
| First name | Part of (0010,0010) |
| Middle name | Part of (0010,0010) |
| Date of birth | (0010,0030) |
| Sex | (0010,0040) |
| Issuer of Patient ID | (0010,0021) |
| MRN | (0010,0020) |
| Alternate ID# | (0010,1000) |
| Title | Part of (0010,0010) |
| Honorific | Part of (0010,0010) |
| Address 1 | Part of (0010,1040) |
| Address 2 (if Address1 is empty) | Part of (0010,1040) |
| City | Part of (0010,1040) |
| State/Province | (0010,2152) |

| Attribute | DICOM Tag |
|---|---|
| Postal code | Part of (0010,1040) |
| Country | (0010,2160) |
| Race | Part of (0010,2154) |
| Home phone | Part of (0010,2154) |
| Business phone | Part of (0010,2154) |
| Mobile phone | |

**Table 113: List of updated Study Attributes**

| Attribute | DICOM Tag |
|---|---|
| Study Description | (0008 ,1030) |
| Accession Number | (0008,0050) |
| Body Part | (0018,0015) |
| Protocol Name | (0018,1030) |
| Admitting Diagnoses Description | (0008,1080) |
| Performed By | (0008,1050) |
| Reading Physician | (0008,1060) |
| Ordering Physician | (0032,1032) |
| Reviewer | (300E,0008) |
| Referring Physician | (0008,0090) |
| Institution Department Name | (0008,1040) |
| Station Name | (0008,1010) |
| Study Comments | (0032,4000) |

#### 4.2.5.4. Association Acceptance Policy

The Application Entity may reject Association attempts as shown in the table below.

**Table 114: Association Reject Reasons**

| Result | Source | Reason/Diagnosis | Behavior |
|---|---|---|---|
| 1 - rejected permanent | 1 - DICOM UL service-user | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - application-context-name-not-supported | The user is informed. Details are logged in central log file. |
| | | 3 - calling-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | | 7 - called-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | 2 - DICOM UL service provider (ACSE related function) | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - protocol-version-not-supported | The user is informed. Details are logged in central log file. |
| | 3 - DICOM UL service provider (Presentation related function) | 1 - temporary-congestion | The user is informed. Details are logged in central log file. |
| | | 2 - local-limit-exceeded | The user is informed. Details are logged in central log file. |
| 2 - rejected-transient | 1 - DICOM UL service-user | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - application-context-name-not-supported | The user is informed. Details are logged in central log file. |
| | | 3 - calling-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | | 7 - called-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | 2 - DICOM UL service provider (ACSE related function) | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - protocol-version-not-supported | The user is informed. Details are logged in central log file. |
| | 3 - DICOM UL service provider (Presentation related function) | 1 - temporary-congestion | The user is informed. Details are logged in central log file. |
| | | 2 - local-limit-exceeded | The user is informed. Details are logged in central log file. |

The behavior of the AE for sending an association abort is summarized in next table.

**Table 115: Association Abort Policies**

| Source | Reason/Diagnosis | Behavior |
|---|---|---|
| 0 - DICOM UL service-user (initiated abort) | 0 - reason-not-specified | When received, terminates the connection and logs the event. |
| 2 - DICOM UL service-provider (initiated abort) | 0 - reason-not-specified | When received, terminates the connection and logs the event. |
| | 1 - unrecognized-PDU | When received, terminates the connection and logs the event. |
| | 2 - unexpected-PDU | When received, terminates the connection and logs the event. |
| | 4 - unrecognized-PDU parameter | When received, terminates the connection and logs the event. |

| Source | Reason/Diagnosis | Behavior |
|---|---|---|
| | 5 - unexpected-PDU parameter | When received, terminates the connection and logs the event. |
| | 6 - invalid-PDU-parameter value | When received, terminates the connection and logs the event. |

#### 4.2.5.4.1. (Real-World) Activity – Verification as SCP

##### 4.2.5.4.1.1. Description and Sequencing of Activities

The Query/Retrieve as SCP AE accepts associations from systems that wish to verify application level communication using the C-ECHO command.

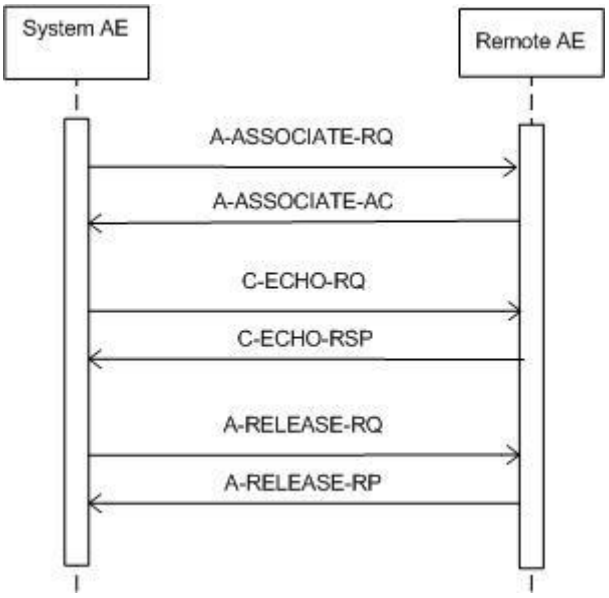


**Figure 20: (Real World) Activity - Verification as SCP**

##### 4.2.5.4.1.2. Accepted Presentation Contexts

The presentation contexts are defined in the next table.

**Table 116: Acceptable Presentation Contexts for (Real-World) Activity – Verification as SCP**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Verification SOP Class | 1.2.840.10008.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

##### 4.2.5.4.1.3. SOP Specific Conformance for Verification SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

The Query/Retrieve as SCP AE provides standard conformance to Verification SOP Class

The Query/Retrieve as SCP (C-ECHO) accept all contexts in the intersection of the proposed and acceptable Presentation Context.

This means that the Query/Retrieve as SCP AE will accept multiple proposed Presentation Contexts with the same SOP Class but different Transfer Syntaxes, so there will be no checks for duplicate Presentation Contexts.

#### 4.2.5.4.1.3.1. Dataset Specific Conformance for Verification C-ECHO SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 117: Status Response**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Confirmation | Message in log file. |

### 4.2.5.4.2. (Real-World) Activity – FIND as SCP

#### 4.2.5.4.2.1. Description and Sequencing of Activities

IntelliSpace Cardiovascular allows the clinical user to query and retrieve data from other systems in the DICOM network. In communications with other nodes, IntelliSpace Cardiovascular operates as a DICOM Query/Retrieve SCP and DICOM Store SCU, which are compatible with DICOM Query/Retrieve SCU and Store SCP provided by other products.

Query/Retrieve as SCP AE accepts associations from systems that wish to query IntelliSpace Cardiovascular database using the C-FIND command.

#### 4.2.5.4.2.2. Accepted Presentation Contexts

The presentation contexts are defined in the next table.

**Table 118: Acceptable Presentation Contexts for (Real-World) Activity – FIND As SCP**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Patient Root QR Information Model - FIND SOP Class | 1.2.840.10008.5.1.4.1.2.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Study Root QR Information Model - FIND SOP Class | 1.2.840.10008.5.1.4.1.2.2.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| PatientStudy Only QR Info. Model - FIND SOP Class (Retired) | 1.2.840.10008.5.1.4.1.2.3.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

#### 4.2.5.4.2.3. SOP Specific Conformance for Patient Root QR Information Model - FIND SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

The Query/Retrieve as SCP provides standard conformance.

The Query/Retrieve as SCP accepts all contexts in the intersection of the proposed and acceptable Presentation Context. This means that the Query/Retrieve as SCP will accept multiple proposed Presentation Contexts with the same SOP Class but different Transfer

Syntaxes, so there will be no checks for duplicate Presentation Contexts.

If the C-FIND query is such that more than 1000 matches are found the Query/Retrieve SCP will return an error “out of resources” indicating there are more matches than the system can handle.

If a wildcards are used in a C-FIND, all matching records and all null records are returned by IntelliSpace Cardiovascular.

#### 4.2.5.4.2.3.1. Dataset Specific Conformance for Patient Root QR Information Model - FIND SOP Class C-FIND-SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.

**Table 119: Requested Query Keys for Patient Root Information Model**

| Patient Root Information Model | | | | |
|---|---|---|---|---|
| **Attribute Name** | **Tag** | **VR** | **Type Of Matching** | **Comment** |
| Query/Retrieve Level | 0008,0052 | CS | | Patient, Study, Series. |
| Specific Character Set | 0008,0005 | CS | | - |
| **Q/R Patient level** | | | | |
| Patient ID | 0010,0020 | LO | Single Value, Wildcard, Universal | - |
| Patient's Birth Date | 0010,0030 | DA | Single Value, Universal | - |
| Patient's Name | 0010,0010 | PN | Single Value, Universal, WildCard | - |
| Patient's Sex | 0010,0040 | CS | Single Value, Universal, WildCard | - |
| **Q/R Study level** | | | | |
| Accession Number | 0008,0050 | SH | Single Value, Universal, WildCard | - |
| Issuer of Patient ID | 0010,0021 | LO | Single Value, Universal, WildCard | |
| Modalities in Study | 0008,0061 | CS | Universal | |
| Number of Study Related Instances | 0020,1208 | IS | Universal | |
| Number of Study Related Series | 0020,1206 | IS | Universal | |
| Referring Physician's Name | 0008,0090 | PN | Single Value, Universal, WildCard | - |
| Study Date | 0008,0020 | DA | Range, Single Value, Universal | - |
| Study ID | 0020,0010 | SH | Single Value, Universal, WildCard | - |
| Study Instance UID | 0020,000D | UI | List Of UID, Single Value, Universal | - |
| Study Time | 0008,0030 | TM | Range, Single Value, Universal | - |
| **Q/R Series level** | | | | |
| Body Part Examined | 0018,0015 | CS | | - |
| Modality | 0008,0060 | CS | Single Value, Universal | - |
| Performing Physician's Name | 0008,1050 | PN | | - |
| Protocol Name | 0018,1030 | LO | | - |
| Series Instance UID | 0020,000E | UI | List Of UID, Single Value, | - |

| | | | | |
|---|---|---|---|---|
| | | | Universal | |
| Series Number | 0020,0011 | IS | Single Value, Universal | - |
| **Q/R Image level** | | | | |
| Instance Number | 0020,0013 | IS | Single Value, Universal | - |
| SOP Class UID | 0008,0016 | UI | List Of UID, Single Value, Universal | |
| SOP Instance UID | 0008,0018 | UI | List Of UID, Single Value, Universal | - |

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.
Possible Status Responses during C-FIND responses are listed here:

**Table 120: Status Response**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Matching is complete | No final identifier is supplied. Logged and continued. |
| Failed | A900 | Invalid dataset | Related fields (0000,0901) (0000,0902) |
| Pending | FF01 | Current match is supplied | Matches are continuing; Current match is supplied and any Optional Keys were supported in the same manner as Required Keys. (Related fields: identifier) |
| | FF01 | Warning | Matches are continuing; Warning that one or more Optional Keys were not supported for existence and/or matching for this identifier (Related fields: identifier). |
| Refused | A700 | Out of resources | Related fields (0000,0902) |

If a query returns more than 1000 results, the system sends an “out of resources” messages back to the client instead or returning query results.
Possible communication failures during the query process are:

**Table 121: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| Timeout | The association is released and the reason is logged. |
| Association aborted | The association is released and the reason is logged. |

#### 4.2.5.4.2.4. SOP Specific Conformance for Study Root QR Information Model - FIND SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

The IntelliSpace Cardiovascular Query/Retrieve SCP AE provides standard conformance to the Study Root Q/R Information model.

##### 4.2.5.4.2.4.1. Dataset Specific Conformance for Study Root QR Information Model - FIND SOP Class C-FIND-SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.

**Table 122: Requested Query Keys for Study Root Information Model**

| Study Root Information Model | | | | |
|---|---|---|---|---|
| **Attribute Name** | **Tag** | **VR** | **Type Of Matching** | **Comment** |
| Query/Retrieve Level | 0008,0052 | CS | | Patient, Study, Series. |
| Specific Character Set | 0008,0005 | CS | | - |

| | | | | |
|---|---|---|---|---|
| **Q/R Study level** | | | | |
| Accession Number | 0008,0050 | SH | Single Value, Universal | - |
| Patient ID | 0010,0020 | LO | Single Value | - |
| Patient's Birth Date | 0010,0030 | DA | Single Value, Universal, WildCard | - |
| Patient's Name | 0010,0010 | PN | Single Value, Universal, WildCard | Wildcard matching not case sensitive. |
| Patient's Sex | 0010,0040 | CS | Single Value, Universal | - |
| Referring Physician's Name | 0008,0090 | PN | Single Value, Universal | - |
| Study Date | 0008,0020 | DA | Range, Single Value, Universal | - |
| Study ID | 0020,0010 | SH | Single Value, Universal, WildCard | - |
| Study Instance UID | 0020,000D | UI | List Of UID, Single Value, Universal | - |
| Study Time | 0008,0030 | TM | Single Value, Universal | - |
| **Q/R Series level** | | | | |
| Modality | 0008,0060 | CS | Single Value, Universal | - |
| Series Instance UID | 0020,000E | UI | List Of UID, Single Value, Universal | - |
| Series Number | 0020,0011 | IS | Single Value, Universal | - |
| **Q/R Image level** | | | | |
| Instance Number | 0020,0013 | IS | Single Value, Universal | - |
| SOP Instance UID | 0008,0018 | UI | List Of UID, Single Value, Universal | - |

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 123: Status Response**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Matching is complete | The C-FIND request handling is completed, no more C-FIND responses are sent. |
| Refused | A700 | Out of Resources | N/A |
| Failed | A900 | Identifier does not match SOP class | N/A |
| | C000 | Unable to process | The C-FIND request cannot be parsed. ViewForum logs the reason. |
| Cancel | FE00 | Matching terminated due to Cancel Request | The C-FIND request is canceled, no more C-FIND responses are sent. |
| Pending | FF00 | Matches are continuing – Current match is supplied and any optional keys were supported in the same manner as required keys | The C-FIND responses are continuing. |
| | FF01 | Matches are continuing – Warning that one or more optional keys were not supported for existence and/or matching for this identifier | The C-FIND responses are continuing. |

**Table 124: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| ARTIM Time-out | The query fails in case of association setup. The reason is logged. |

| Exception | Behavior |
|---|---|
| Reply Time-out | The query fails and association is aborted. The reason is logged. |

#### 4.2.5.4.2.5. SOP Specific Conformance for PatientStudy Only QR Info. Model - FIND SOP Class (Retired)

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

The IntelliSpace Cardiovascular Query/Retrieve SCP AE provides standard conformance to the Patient/ Study only Q/R Information model.

##### 4.2.5.4.2.5.1. Dataset Specific Conformance for PatientStudy Only QR Info. Model - FIND SOP Class C-FIND-SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.

**Table 125: Requested Query Keys for Patient/Study Only Information Model**

| Patient/Study Only Information Model | | | | |
|---|---|---|---|---|
| **Attribute Name** | **Tag** | **VR** | **Type Of Matching** | **Comment** |
| Query/Retrieve Level | 0008,0052 | CS | | Patient, Study. |
| Specific Character Set | 0008,0005 | CS | | - |
| **Q/R Patient level** | | | | |
| Patient ID | 0010,0020 | LO | Single Value, Universal, WildCard | - |
| Patient's Birth Date | 0010,0030 | DA | Range, Single Value, Universal | - |
| Patient's Name | 0010,0010 | PN | Single Value, Universal, WildCard | Wildcard matching not case sensitive. |
| Patient's Sex | 0010,0040 | CS | Single Value, Universal | - |
| **Q/R Study level** | | | | |
| Accession Number | 0008,0050 | SH | | - |
| Referring Physician's Name | 0008,0090 | PN | | - |
| Study Date | 0008,0020 | DA | Single Value, Range | - |
| Study ID | 0020,0010 | SH | Single Value, Wildcard, Universal | - |
| Study Instance UID | 0020,000D | UI | | - |
| Study Time | 0008,0030 | TM | | - |

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

The table with possible Status Reponses for C-FIND request handling is shown here:

**Table 126: Status Response**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Matching is complete | The C-FIND request handling is completed, no more C-FIND responses are sent. status logged; continued |
| Refused | A700 | Out of Resources | N/A |
| Failed | A900 | Identifier does not match SOP class | N/A |

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| | C000 | Unable to process | The C-FIND request cannot be parsed. ViewForum logs the reason. |
| Cancel | FE00 | Matching terminated due to Cancel Request | The C-FIND request is canceled, no more C-FIND responses are sent. |
| Pending | FF00 | Matches are continuing – Current match is supplied and any optional keys were supported in the same manner as required keys | The C-FIND responses are continuing. |
| | FF01 | Matches are continuing – Warning that one or more optional keys were not supported for existence and/or matching for this identifier | The C-FIND responses are continuing. |

Below can be seen the table with the possible communication failures during the C-FIND request handling:

**Table 127: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| ARTIM Time-out | The query fails in case of association setup. The reason is logged. |
| Reply Time-out | The query fails and association is aborted. The reason is logged. |

#### 4.2.5.4.3. (Real-World) Activity – MOVE as SCP

##### 4.2.5.4.3.1. Description and Sequencing of Activities

The Query/Retrieve as SCP AE accepts associations from systems that wish to retrieve instances from IntelliSpace Cardiovascular database using the C-MOVE service. The Query/Retrieve as SCP AE accepts all contexts in the intersection of the proposed and acceptable Presentation Context. This means that the Query/Retrieve as SCP AE will accept multiple proposed Presentation Contexts with the same SOP Class but different Transfer Syntaxes, so there will be no checks for duplicate Presentation Contexts.

##### 4.2.5.4.3.2. Accepted Presentation Contexts

The presentation contexts are defined in the next table.

**Table 128: Acceptable Presentation Contexts for (Real-World) Activity – MOVE As SCP**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Patient Root QR Information Model - MOVE SOP Class | 1.2.840.10008.5.1.4.1.2.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Study Root QR Information Model - MOVE SOP Class | 1.2.840.10008.5.1.4.1.2.2.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| PatientStudy Only QR Info. Model - MOVE SOP Class (Retired) | 1.2.840.10008.5.1.4.1.2.3.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

##### 4.2.5.4.3.3. SOP Specific Conformance for Patient Root QR Information Model - MOVE SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

The IntelliSpace Cardiovascular Query/Retrieve as SCP AE provides standard conformance to Patient Root Q/R Information Model – MOVE SOP Class.

The Query/Retrieve as SCP AE supports all Query/Retrieve SOP classes. A C-STORE association is built after the C-MOVE request. The Query/Retrieve as SCP AE does not send intermediate C-MOVE responses with status pending.

#### 4.2.5.4.3.3.1. Dataset Specific Conformance for Patient Root QR Information Model - MOVE SOP Class C-MOVE-SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.

**Table 129: Identifiers for MOVE Patient Root Information Model as SCP**

| Patient Root Information Model | | | |
|---|---|---|---|
| **Attribute Name** | **Tag** | **VR** | **Comment** |
| Query/Retrieve Level | 0008,0052 | CS | - |
| **Q/R Patient level** | | | |
| Patient ID | 0010,0020 | LO | - |
| **Q/R Study level** | | | |
| Study Instance UID | 0020,000D | UI | Single Value, List of UIDs |
| **Q/R Series level** | | | |
| Series Instance UID | 0020,000E | UI | Single Value, List of UIDs |
| **Q/R Image level** | | | |
| SOP Instance UID | 0008,0018 | UI | Single Value |

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 130: Status Response**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Sub-operations complete | No final identifier is supplied Related fields (0000,1020) (0000,1021) (0000,1022) (0000,1023). |
| Warning | B000 | Sub-operations complete | One or more failures Related fields (0000,1020) (0000,1022) (0000,1023). |
| Failed | A900 | Invalid dataset | Related fields (0000,0901) (0000,0902). |
| | C001 | Unable to process | Related fields (0000,0901) (0000,0902). |
| Pending | FF00 | Sub-operations are continuing | The move job continues. |

**Table 131: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| ARTIM Time-out | The query fails in case of association setup. The reason is logged. |
| Reply Time-out | The query fails and association is aborted. The reason is logged. |

#### 4.2.5.4.3.4. SOP Specific Conformance for Study Root QR Information Model - MOVE SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

The IntelliSpace Cardiovascular Query/Retrieve as SCP AE provides standard conformance to Study Root Q/R Information Model – MOVE SOP Class.

#### 4.2.5.4.3.4.1. Dataset Specific Conformance for Study Root QR Information Model - MOVE SOP Class C-MOVE-SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.

**Table 132: Identifiers for MOVE Study Root Information Model as SCP**

| Study Root Information Model | | | |
|---|---|---|---|
| **Attribute Name** | **Tag** | **VR** | **Comment** |
| Query/Retrieve Level | 0008,0052 | CS | - |
| **Q/R Study level** | | | |
| Study Instance UID | 0020,000D | UI | Single Value, List of UID |
| Q/R Series level | | | |
| Series Instance UID | 0020,000E | UI | Single Value,List of UID |
| **Q/R Image level** | | | |
| SOP Instance UID | 0008,0018 | UI | Single Value, List of UID |

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 133: Status Response**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Sub-operations complete | No final identifier is supplied. Related fields (0000,1020) (0000,1021) (0000,1022) (0000,1023). |
| Warning | B000 | Sub-operations complete | One or more failures. Related fields (0000,1020) (0000,1022) (0000,1023). |
| Failed | A900 | Invalid dataset | Related fields (0000,0901) (0000,0902). |
| | C001 | Unable to process | Related fields (0000,0901) (0000,0902). |

**Table 134: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| ARTIM Time-out | The query fails in case of association setup. The reason is logged. |
| Reply Time-out | The query fails and association is aborted. The reason is logged. |

### 4.2.5.4.3.5. SOP Specific Conformance for PatientStudy Only QR Info. Model - MOVE SOP Class (Retired)

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

The IntelliSpace Cardiovascular Query/Retrieve as SCP AE provides standard conformance to Patient/Study Only Q/R Information Model – MOVE SOP Class.

#### 4.2.5.4.3.5.1. Dataset Specific Conformance for PatientStudy Only QR Info. Model - MOVE SOP Class C-MOVE-SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.

### Table 135: Identifiers for MOVE Patient/Study Only Information Model as SCP

| Patient/Study Only Information Model | | | |
|---|---|---|---|
| **Attribute Name** | **Tag** | **VR** | **Comment** |
| Query/Retrieve Level | 0008,0052 | CS | - |
| **Q/R Patient level** | | | |
| Patient ID | 0010,0020 | LO | - |
| **Q/R Study level** | | | |
| Study Instance UID | 0020,000D | UI | Single Value, List of UID |

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

### Table 136: Status Response

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Sub-operations complete | No final identifier is supplied Related fields (0000,1020) (0000,1021) (0000,1022) (0000,1023). |
| Warning | B000 | Sub-operations complete | One or more failures Related fields (0000,1020) (0000,1022) (0000,1023). |
| Failed | A900 | Invalid dataset | Related fields (0000,0901) (0000,0902). |
| | C001 | Unable to process | Related fields (0000,0901) (0000,0902). |

### Table 137: DICOM Command Communication Failure Behavior

| Exception | Behavior |
|---|---|
| ARTIM Time-out | The query fails in case of association setup. The reason is logged. |
| Reply Time-out | The query fails and association is aborted. The reason is logged. |

## 4.2.6. Query Retrieve as SCU AE

Detail of this specific Application Entity is specified in this section.

### 4.2.6.1. SOP Classes

The Query/Retrieve SCU AE is used for sending Query/Retrieve requests to remote system. The actual import of DICOM Instances (images, objects) into IntelliSpace Cardiovascular Server is handled by another AE. The Query/Retrieve SCU AE makes use of the following DICOM functions:
- Query / Retrieve SCU, which uses C-ECHO as service element.
- Query as SCU, which uses C-FIND as service element.
- Retrieve as SCU, which uses C-MOVE as service element.

This Application Entity provides Standard Conformance to the following SOP Classes.

**Table 138: SOP Classes for Query Retrieve as SCU AE**

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Verification SOP Class | 1.2.840.10008.1.1 | Yes | No |
| Study Root QR Information Model - FIND SOP Class | 1.2.840.10008.5.1.4.1.2.2.1 | Yes | No |
| Study Root QR Information Model - MOVE SOP Class | 1.2.840.10008.5.1.4.1.2.2.2 | Yes | No |

Note: Any SOP specific behavior is documented later in the conformance statement in the applicable SOP specific conformance section.

### 4.2.6.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

#### 4.2.6.2.1. General

The DICOM standard application context is specified below.

**Table 139: DICOM Application Context**

| Description | Value |
|---|---|
| Application Context Name | 1.2.840.10008.3.1.1.1 |

#### 4.2.6.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as an Initiator or Acceptor is specified here.

**Table 140: Number of associations as an Association Initiator for this AE**

| Description | Value |
|---|---|
| Maximum number of simultaneous associations | 5 |

#### 4.2.6.2.3. Asynchronous Nature

The implementation supports negotiation of multiple outstanding transactions, along with the maximum number of outstanding transactions supported.

**Table 141: Asynchronous nature as an Association Initiator for this AE**

| Description | Value |
|---|---|
| Maximum number of outstanding asynchronous transactions | Not applicable |

#### 4.2.6.2.4. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

**Table 142: DICOM Implementation Class and Version for Query Retrieve as SCU AE**

| | |
|---|---|
| Implementation Class UID | 1.3.46.670589.16.14.4.1.1 |
| Implementation Version Name | ISCV R1.1.L1 |

#### 4.2.6.2.5. Communication Failure Handling

The behavior of the AE during communication failure is summarized in the next table.

**Table 143: Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| ARTIM Timeout | The association is released and the reason is logged. |

### 4.2.6.3. Association Initiation Policy

The Application Entity will respond on a received reject Association attempt as shown in next table.

**Table 144: Association Rejection response**

| Result | Source | Reason/Diagnosis | Behavior |
|---|---|---|---|
| 1 - rejected-permanent | 1 - DICOM UL service-user | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - application-context-name-not supported | The user is informed. Details are logged in central log file. |
| | | 3 - calling-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | | 7 - called-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | 2 - DICOM UL service-provider (ACSE related function) | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - protocol-version-not-supported | The user is informed. Details are logged in central log file. |
| | 3 - DICOM UL service-provider (Presentation related function) | 1 - temporary-congestion | The user is informed. Details are logged in central log file. |
| | | 2 - local-limit-exceeded | The user is informed. Details are logged in central log file. |
| 2 - rejected-transient | 1 - DICOM UL service-user | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - application-context-name-not-supported | The user is informed. Details are logged in central log file. |
| | | 3 - calling-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | | 7 - called-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | 2 - DICOM UL service-provider (ACSE related function) | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - protocol-version-not-supported | The user is informed. Details are logged in central log file. |

| Result | Source | Reason/Diagnosis | Behavior |
|---|---|---|---|
| | 3 - DICOM UL service-provider (Presentation related function) | 1 - temporary-congestion | The user is informed. Details are logged in central log file. |
| | | 2 - local-limit-exceeded | The user is informed. Details are logged in central log file. |

The behavior of the AE on receiving an association abort is summarized in the next table.

**Table 145: Association Abort Handling**

| Source | Reason/Diagnosis | Behavior |
|---|---|---|
| 0 - DICOM UL service-user (initiated abort) | 0 - reason-not-specified | When received, terminates the connection and logs the event. |
| 2 - DICOM UL service-provider (initiated abort) | 0 - reason-not-specified | When received, terminates the connection and logs the event. |
| | 1 - unrecognized-PDU | When received, terminates the connection and logs the event. |
| | 2 - unexpected-PDU | When received, terminates the connection and logs the event. |
| | 4 - unrecognized-PDU-parameter | When received, terminates the connection and logs the event. |
| | 5 - unexpected-PDU-parameter | When received, terminates the connection and logs the event. |
| | 6 - invalid-PDU-parameter-value | When received, terminates the connection and logs the event. |

#### 4.2.6.3.1. (Real-World) Activity – Verification as SCU

##### 4.2.6.3.1.1. Description and Sequencing of Activities

As defined the Network AE acts as a Verification SCP for any Remote SCU as Verification SCU.

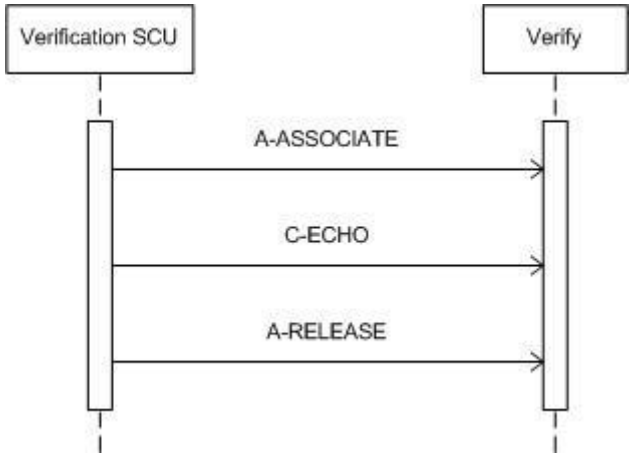


**Figure 21: Sequencing of Verify**

##### 4.2.6.3.1.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

**Table 146: Proposed Presentation Contexts for (Real-World) Activity – Verification as SCU**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Verification SOP Class | 1.2.840.10008.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

Note: No extended negotiations supported by IntelliSpace Cardiovascular Network AE.

#### 4.2.6.3.1.3. SOP Specific Conformance for Verification SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

##### 4.2.6.3.1.3.1. Dataset Specific Conformance for Verification C-ECHO SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 147: Status Response**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Matching is complete | Continue; information logged. |

### 4.2.6.3.2. (Real-World) Activity – FIND as SCU

#### 4.2.6.3.2.1. Description and Sequencing of Activities

The Query/Retrieve as SCU AE initiates associations to other systems that support the Study Root Query/Retrieve C-FIND service.

**Normal flow of events for C-FIND:**
1. The user selects criteria's where to query on and after that, IntelliSpace Cardiovascular sets up a connection with the selected external DICOM node.
2. Based on query results, the user selected on or more entries to be retrieved. The retrieve request will be send to the remote DICOM node.
3. In response, the external DICOM node returns (0 or more) query results in the form of a list of studies that meet the search criteria entered earlier by the clinical user. The user selects the studies to retrieve from the external DICOM node.
4. When the requested instances are stored, the remote host closes the connection with IntelliSpace Cardiovascular.

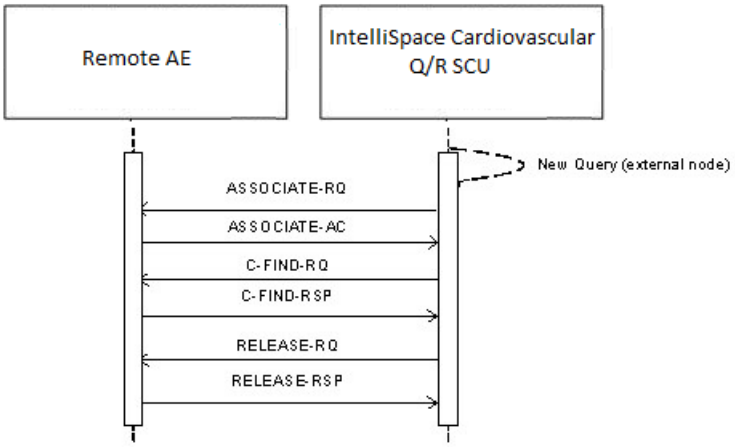


**Figure 22: (Real World) Activity - FIND As SCU**

**Normal flow of events for C-MOVE:**

1. Based on query results, the user selected on or more entries to be retrieved.
2. IntelliSpace Cardiovascular sets up a request connection with the external DICOM node that provided the query results, and negotiates communication parameters.
3. IntelliSpace Cardiovascular sends a retrieve request to the external DICOM node. The external DICOM node sets up a store connection with the Store SCP. Connection set up take place and is only accepted by the Store SCP, if the Query/Retrieve SCU has an open retrieve connection with the external DICOM node. Meanwhile it is possible to send C-MOVE-RSP PENDING to the IntelliSpace Cardiovascular server.
4. The external DICOM node sends over the requested DICOM instance data.
5. The connection will be closed by IntelliSpace Cardiovascular.

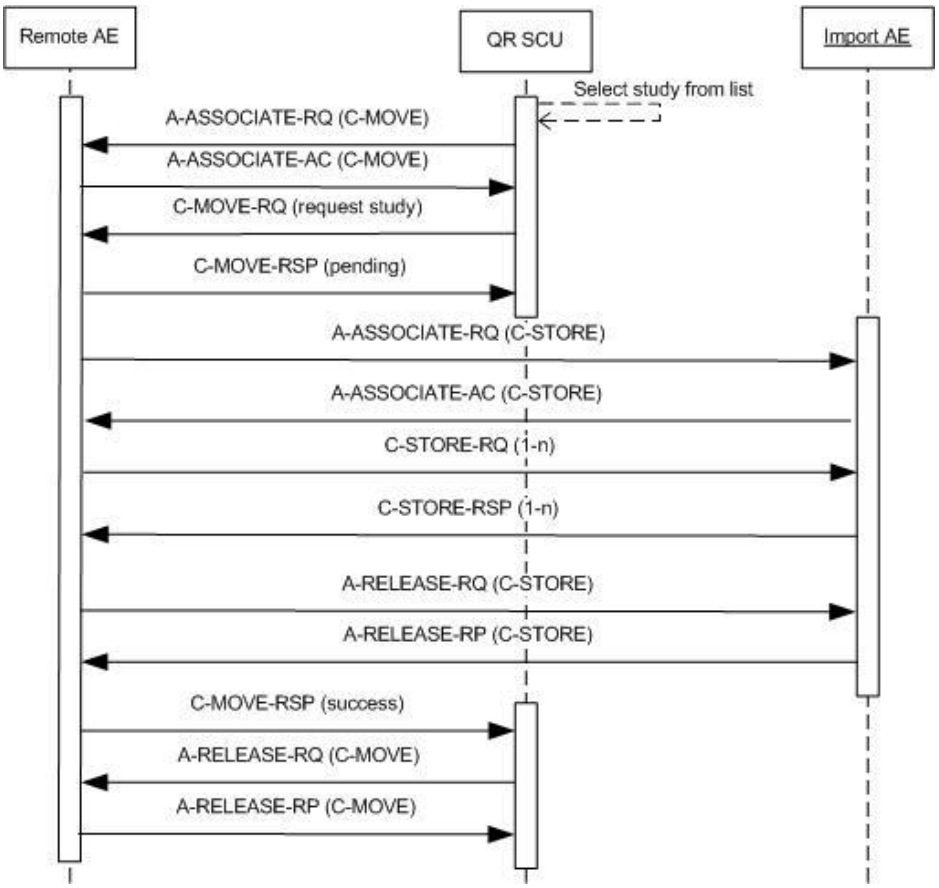


**Figure 23: Flow diagram Retrieve DICOM image data from external DICOM node.**

#### 4.2.6.3.2.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

**Table 148: Proposed Presentation Contexts for (Real-World) Activity – FIND As SCU**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Study Root QR Information Model - FIND SOP Class | 1.2.840.10008.5.1.4.1.2.2.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

#### 4.2.6.3.2.3. SOP Specific Conformance for Study Root QR Information Model - FIND SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

Only Study level queries are supported.

The Query/Retrieve as SCU AE supports queries based on the combination of the following (Study level) attributes and attribute matching types (as defined in [DICOM] PS 3.4).

#### 4.2.6.3.2.3.1. Dataset Specific Conformance for Study Root QR Information Model - FIND SOP Class C-FIND-SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

**Table 149: Supported Query Keys for Study Root Information Model**

| Study Root Information Model | | | | |
|---|---|---|---|---|
| **Attribute Name** | **Tag** | **VR** | **Type Of Matching** | **Comment** |
| Query/Retrieve Level | 0008,0052 | CS | | - |
| Specific Character Set | 0008,0005 | CS | | - |
| **Q/R Study level** | | | | |
| Accession Number | 0008,0050 | SH | Single Value, Universal, WildCard | - |
| Modalities in Study | 0008,0061 | CS | Single Value, Universal | All, CT, CR, DX, ECG, EPS, IVUS, MG, MR, NM, OT, PT, RF, US, XA |
| Patient ID | 0010,0020 | LO | Single Value, Universal, WildCard | '*' character is always suffixed with this value.<br>Its called MRN here. |
| Patient's Birth Date | 0010,0030 | DA | Single Value, Universal | Should be in the format M/d/yyyy. |
| Patient's Name | 0010,0010 | PN | Single Value, Universal, WildCard, | |
| Patient's Sex | 0010,0040 | CS | Single Value, Universal | All,M,F,O,U |
| Study Date | 0008,0020 | DA | Range, Single Value, Universal | Add All,Today,Yesterday,Last 2 days,Last 3 days, Last 4 days, Last 7 days, Last 10 days, Last 30 days, This Week, Last week, This month, Last Month, Last 2 months, This year, Last year. |
| Study Instance UID | 0020,000D | UI | Universal | - |
| Institution Name | 0008,0080 | LO | Universal | All |

**Note**: The Patient's Name key attribute matching type is implicitly converted from Single Value matching to Wild Card matching by adding a Wild Card "*" character at the end of its value.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 150: DICOM command response status handling behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Matching is complete | Continue, Log. |
| Refused | A700 | Refused – Out of resources | Log; Release association. |
| Failed | A900 | Error – Identifier does not match SOP class | Log; Release association. |
| | C001 | Error – Unable to process | Log; Release association. |
| Cancel | FE00 | Matching terminated due to cancel request | Log; Release association. |
| Pending | FF00 | Matches are continuing – current match is supplied and any optional keys were supported in the same manner as required keys | Continue |
| | FF01 | Matches are continuing – warning that one or more optional keys were not supported for existence and/or matching for this identifier | Continue |

**Table 151: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| Timeout | The association is released and the reason is logged. |
| Association aborted | The association is released and the reason is logged. |

#### 4.2.6.3.3. (Real-World) Activity – MOVE as SCU

##### 4.2.6.3.3.1. Description and Sequencing of Activities

The Query/Retrieve as SCU AE initiates associations to other systems that support the Study Root Query/Retrieve C-MOVE service.

##### 4.2.6.3.3.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

**Table 152: Proposed Presentation Contexts for (Real-World) Activity – MOVE As SCU**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Study Root QR Information Model - MOVE SOP Class | 1.2.840.10008.5.1.4.1.2.2.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

##### 4.2.6.3.3.3. SOP Specific Conformance for Study Root QR Information Model - MOVE SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

Only Study level queries are supported. The Query/Retrieve as SCU AE supports queries based on the combination of the following (Study level) attributes and attribute matching types (as defined in [DICOM] PS 3.4).

###### 4.2.6.3.3.3.1. Dataset Specific Conformance for Study Root QR Information Model - MOVE SOP Class C-MOVE-SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

**Table 153: Identifiers for MOVE Study Root Information Model as SCU**

| Study Root Information Model | | | |
|---|---|---|---|
| Attribute Name | Tag | VR | Comment |
| Query/Retrieve Level | 0008,0052 | CS | - |
| **Q/R Study level** | | | |
| Study Instance UID | 0020,000D | UI | - |

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 154: DICOM command response status handling behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Sub-operations complete – no failures | Continue. |
| Refused | A700 | Refused – Out of resources | Log; Release association. |
| Failed | A900 | Error – Identifier does not match SOP class | Log; Release association. |
| | C001 | Error – Unable to process | Log; Release association. |
| Warning | B000 | Sub-operations complete – one or more failures | The SCP has retrieved all requested images. Release association. |
| Cancel | FE00 | Sub-operations terminated due to cancel request | Log; Release association. |
| Pending | FF00 | Sub-operations are continuing | Continue. |

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| | FF01 | Sub-operations are continuing | Continue. |

**Exceptions:**
1. The maximum number of parallel query/retrieve is reached. The request is queued by FIFO order.
2. At any point in time, an error occurs in the network or on the external DICOM node; IntelliSpace Cardiovascular will close the connection and report an error
3. If an error occurs during data transfer, IntelliSpace Cardiovascular will close the connection and report an error
4. If an error occurs on de external DICOM node while setting up the connection, IntelliSpace Cardiovascular will abort all actions related to that connection and report an error.

**Table 155: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| Timeout | The association is released and the reason is logged. |
| Association aborted | The association is released and the reason is logged. |

#### 4.2.6.4. Association Acceptance Policy

Not applicable, the Query/Retrieve SCU AE doesn't accept any associations from other DICOM nodes.

## 4.2.7. Send AE

Detail of this specific Application Entity is specified in this section.

### 4.2.7.1. SOP Classes

Send AE, for its functioning, makes use of following DICOM functions:

- Verification as SCU, which uses C-ECHO service element.
- Storage as SCU, which uses C-STORE as service element.
- Patient / Study are always updates with the latest information for the exported studies. (Refer to the tables in section 4.2.7.3.2.4 for the list of updated patient and study attributes)

These DICOM functions will be described in the following subsections.

This Application Entity provides Standard Conformance to the following SOP Classes.

**Table 156: SOP Classes for Send AE**

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Verification SOP Class | 1.2.840.10008.1.1 | Yes | No |
| Hardcopy Grayscale Image Storage (Retired) | 1.2.840.10008.5.1.1.29 | Yes | No |
| Hardcopy Color Image Storage (Retired) | 1.2.840.10008.5.1.1.30 | Yes | No |
| Computed Radiography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.1 | Yes | No |
| Digital X-Ray Image Storage - For Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.1 | Yes | No |
| Digital X-Ray Image Storage - For Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.1.1 | Yes | No |
| Digital Mammography X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.2 | Yes | No |
| Digital Mammography X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.2.1 | Yes | No |
| Digital Intra-oral X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.3 | Yes | No |
| Digital Intra-oral X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.3.1 | Yes | No |
| Standalone Modality LUT Storage (Retired) | 1.2.840.10008.5.1.4.1.1.10 | Yes | No |
| Encapsulated PDF Storage | 1.2.840.10008.5.1.4.1.1.104.1 | Yes | No |
| Standalone VOI LUT Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.11 | Yes | No |
| Grayscale Softcopy Presentation State Storage SOP Class | 1.2.840.10008.5.1.4.1.1.11.1 | Yes | No |
| X-Ray Angiographic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.1 | Yes | No |
| X-Ray Radiofluoroscopic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.2 | Yes | No |
| X-Ray Angiographic Bi-Plane Image Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.12.3 | Yes | No |
| Positron Emission Tomography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.128 | Yes | No |
| Standalone PET Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.129 | Yes | No |
| CT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.2 | Yes | No |
| Nuclear Medicine Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.20 | Yes | No |
| Ultrasound Multi-frame Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.3 | Yes | No |
| Ultrasound Multi-frame Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.3.1 | Yes | No |
| MR Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.4 | Yes | No |
| RT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.1 | Yes | No |
| RT Dose Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.2 | Yes | No |
| RT Structure Set Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.3 | Yes | No |
| RT Plan Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.5 | Yes | No |
| Ultrasound Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.6 | Yes | No |

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Ultrasound Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.6.1 | Yes | No |
| Raw Data Storage SOP Class | 1.2.840.10008.5.1.4.1.1.66 | Yes | No |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 | Yes | No |
| Multi-frame Single Bit Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.1 | Yes | No |
| Multi-frame Grayscale Byte SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.2 | Yes | No |
| Multi-frame Grayscale Word SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.3 | Yes | No |
| Multi-frame True Color Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.4 | Yes | No |
| Standalone Overlay Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.8 | Yes | No |
| Basic Text SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.11 | Yes | No |
| Enhanced SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.22 | Yes | No |
| Detail SR Storage - Trial (Retired) | 1.2.840.10008.5.1.4.1.1.88.3 | Yes | No |
| Comprehensive SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.33 | Yes | No |
| X-Ray Radiation Dose SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.67 | Yes | No |
| Standalone Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.9 | Yes | No |
| General ECG Waveform Storage SOP Class | 1.2.840.10008.5.1.4.1.1.9.1.2 | Yes | No |
| Philips Private X-Ray Image Storage | 1.3.46.670589.2.3.1.1 | Yes | No |
| Philips Private Reconstructed X-ray Storage | 1.3.46.670589.2.4.1.1 | Yes | No |
| Philips Private iE33 3D NEO Presentation State Subpage Storage | 1.3.46.670589.2.5.1.1 | Yes | No |
| Philips Private ViewForum 3D Volume New Storage | 1.3.46.670589.5.0.1.1 | Yes | No |
| Philips Private ViewForum MR Synthetic Image Storage | 1.3.46.670589.5.0.10 | Yes | No |
| Philips Private ViewForum MR Cardio Analysis New Storage | 1.3.46.670589.5.0.11.1 | Yes | No |
| Philips Private ViewForum CX Synthetic Image Storage | 1.3.46.670589.5.0.12 | Yes | No |
| Philips Private ViewForum Perfusion Storage | 1.3.46.670589.5.0.13 | Yes | No |
| Philips Private ViewForum Perfusion Analysis Storage | 1.3.46.670589.5.0.14 | Yes | No |
| Philips Private ViewForum 3D Volume Object New Storage | 1.3.46.670589.5.0.2.1 | Yes | No |
| Philips Private ViewForum Surface New Storage | 1.3.46.670589.5.0.3.1 | Yes | No |
| Philips Private ViewForum MR Cardio New Storage | 1.3.46.670589.5.0.8.1 | Yes | No |
| Philips Private ViewForum CT Synthetic Image Storage | 1.3.46.670589.5.0.9 | Yes | No |

Note: Any SOP specific behavior is documented later in the conformance statement in the applicable SOP specific conformance section.

#### 4.2.7.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

##### 4.2.7.2.1. General

The DICOM standard application context is specified below.

**Table 157: DICOM Application Context**

| Description | Value |
|---|---|
| Application Context Name | 1.2.840.10008.3.1.1.1 |

##### 4.2.7.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as an Initiator or Acceptor is specified here.

For IntelliSpace Cardiovascular the maximum number of associations limited by the availability of the system resources. The license number of the external DICOM nodes is one of these limits.

**Table 158: Number of associations as an Association Initiator for this AE**

| Description | Value |
|---|---|
| Maximum number of simultaneous associations | 5 |

#### 4.2.7.2.3. Asynchronous Nature

The implementation supports negotiation of multiple outstanding transactions, along with the maximum number of outstanding transactions supported.

**Table 159: Asynchronous nature as an Association Initiator for this AE**

| Description | Value |
|---|---|
| Maximum number of outstanding asynchronous transactions | Not applicable |

#### 4.2.7.2.4. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

**Table 160: DICOM Implementation Class and Version for Send AE**

| | |
|---|---|
| Implementation Class UID | 1.3.46.670589.16.14.4.1.1 |
| Implementation Version Name | ISCV R1.1.L1 |

#### 4.2.7.2.5. Communication Failure Handling

The behavior of the AE during communication failure is summarized in the next table.

**Table 161: Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| ARTIM Timeout | The association is closed and the reason is logged. |

### 4.2.7.3. Association Initiation Policy

The Application Entity will respond on a received reject Association attempt as shown in next table.

**Table 162: Association Rejection response**

| Result | Source | Reason/Diagnosis | Behavior |
|---|---|---|---|
| 1 - rejected-permanent | 1 - DICOM UL service-user | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - application-context-name-not supported | The user is informed. Details are logged in central log file. |
| | | 3 - calling-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | | 7 - called-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | 2 - DICOM UL service-provider (ACSE related function) | 1 - no-reason-given | The user is informed. Details are logged in central log file. |

| Result | Source | Reason/Diagnosis | Behavior |
|---|---|---|---|
| | | 2 - protocol-version-not-supported | The user is informed. Details are logged in central log file. |
| | 3 - DICOM UL service-provider (Presentation related function) | 1 - temporary-congestion | The user is informed. Details are logged in central log file. |
| | | 2 - local-limit-exceeded | The user is informed. Details are logged in central log file. |
| 2 - rejected-transient | 1 - DICOM UL service-user | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - application-context-name-not-supported | The user is informed. Details are logged in central log file. |
| | | 3 - calling-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | | 7 - called-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | 2 - DICOM UL service-provider (ACSE related function) | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - protocol-version-not-supported | The user is informed. Details are logged in central log file. |
| | 3 - DICOM UL service-provider (Presentation related function) | 1 - temporary-congestion | The user is informed. Details are logged in central log file. |
| | | 2 - local-limit-exceeded | The user is informed. Details are logged in central log file. |

The behavior of the AE on receiving an association abort is summarized in the next table.

**Table 163: Association Abort Handling**

| Source | Reason/Diagnosis | Behavior |
|---|---|---|
| 0 - DICOM UL service-user (initiated abort) | 0 - reason-not-specified | When received, terminates the connection and logs the event. |
| 2 - DICOM UL service-provider (initiated abort) | 0 - reason-not-specified | When received, terminates the connection and logs the event. |
| | 1 - unrecognized-PDU | When received, terminates the connection and logs the event. |
| | 2 - unexpected-PDU | When received, terminates the connection and logs the event. |
| | 4 - unrecognized-PDU-parameter | When received, terminates the connection and logs the event. |
| | 5 - unexpected-PDU-parameter | When received, terminates the connection and logs the event. |
| | 6 - invalid-PDU-parameter-value | When received, terminates the connection and logs the event. |

#### 4.2.7.3.1. (Real-World) Activity – Verification as SCU

##### 4.2.7.3.1.1. Description and Sequencing of Activities

As defined the Network AE acts as a Verification SCP for any Remote SCU as Verification SCU.

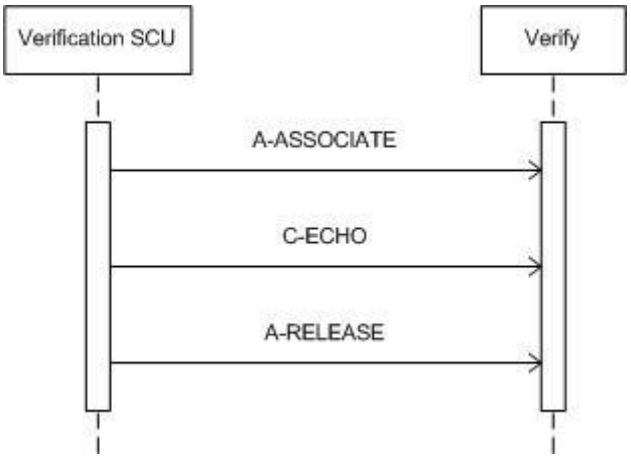


Figure 24: Sequence Verification SCU.

#### 4.2.7.3.1.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

Table 164: Proposed Presentation Contexts for (Real-World) Activity – Verification as SCU

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Verification SOP Class | 1.2.840.10008.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

#### 4.2.7.3.1.3. SOP Specific Conformance for Verification SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

##### 4.2.7.3.1.3.1. Dataset Specific Conformance for Verification C-ECHO SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 165: Status Response

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Complete | Continue; matching information logged. |

### 4.2.7.3.2. (Real-World) Activity – Image Export

#### 4.2.7.3.2.1. Description and Sequencing of Activities

**Normal flow of events:**

1. The user selects one or more studies from the list of studies being displayed.
2. After selection of the external DICOM node, IntelliSpace Cardiovascular sets up a store connection and negotiates communications parameters with this external DICOM node. Connection set up is executed according to the DICOM Store protocols,

with IntelliSpace Cardiovascular acting as a DICOM Store SCU.
3. After this connection is set up, IntelliSpace Cardiovascular sends the user selected study to the external DICOM node. Upon completion of this, the connection is closed. Start and end of the connection and data transfer are logged.
4. Patient Study data will be updated with the latest information. (Refer to the tables in section 4.2.1.3.3.3 for the list of updated patient and study attributes.)

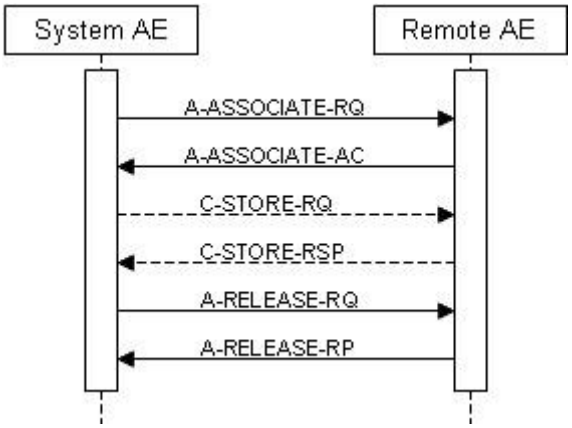


**Figure 25: (Real World) Activity - Image Export (Data Export)**

#### 4.2.7.3.2.2. Proposed Presentation Contexts

The proposed presentation contexts are defined in the next table.

**Table 166: Proposed Presentation Contexts for (Real-World) Activity – Image Export**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Hardcopy Grayscale Image Storage (Retired) | 1.2.840.10008.5.1.1.29 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Hardcopy Color Image Storage (Retired) | 1.2.840.10008.5.1.1.30 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Computed Radiography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital X-Ray Image Storage - For Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital X-Ray Image Storage - For Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Mammography X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Mammography X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.2.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Intra-oral X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Digital Intra-oral X-Ray Image Storage - Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.3.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone Modality LUT Storage (Retired) | 1.2.840.10008.5.1.4.1.1.10 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Encapsulated PDF Storage | 1.2.840.10008.5.1.4.1.1.104.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone VOI LUT Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.11 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Grayscale Softcopy Presentation State Storage SOP Class | 1.2.840.10008.5.1.4.1.1.11.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Angiographic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.1 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| X-Ray Radiofluoroscopic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Angiographic Bi-Plane Image Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.12.3 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Positron Emission Tomography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.128 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone PET Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.129 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| CT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Nuclear Medicine Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.20 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Ultrasound Multi-frame Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.3 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Ultrasound Multi-frame Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.3.1 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| MR Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.4 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| RT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| RT Dose Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| RT Structure Set Storage SOP Class | 1.2.840.10008.5.1.4.1.1.481.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Ultrasound Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.6 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Ultrasound Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.6.1 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Raw Data Storage SOP Class | 1.2.840.10008.5.1.4.1.1.66 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Multi-frame Single Bit Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Multi-frame Grayscale Byte SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Multi-frame Grayscale Word SC Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Multi-frame True Color Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.4 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| | | JPEG Lossless, Non-Hierarchical, FOP (Process 14) | 1.2.840.10008.1.2.4.70 | | |
| Standalone Overlay Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.8 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Basic Text SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.11 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Enhanced SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.22 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Detail SR Storage - Trial (Retired) | 1.2.840.10008.5.1.4.1.1.88.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Comprehensive SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.33 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Radiation Dose SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.67 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Standalone Curve Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.9 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| General ECG Waveform Storage SOP Class | 1.2.840.10008.5.1.4.1.1.9.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private X-Ray Image Storage | 1.3.46.670589.2.3.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private Reconstructed X-ray Storage | 1.3.46.670589.2.4.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private iE33 3D NEO Presentation State Subpage Storage | 1.3.46.670589.2.5.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum 3D Volume New Storage | 1.3.46.670589.5.0.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum MR Synthetic Image Storage | 1.3.46.670589.5.0.10 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum MR Cardio Analysis New Storage | 1.3.46.670589.5.0.11.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum CX Synthetic Image Storage | 1.3.46.670589.5.0.12 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum Perfusion Storage | 1.3.46.670589.5.0.13 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum Perfusion Analysis Storage | 1.3.46.670589.5.0.14 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum 3D Volume Object New Storage | 1.3.46.670589.5.0.2.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum Surface New Storage | 1.3.46.670589.5.0.3.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum MR Cardio New Storage | 1.3.46.670589.5.0.8.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Philips Private ViewForum CT Synthetic Image Storage | 1.3.46.670589.5.0.9 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

#### 4.2.7.3.2.3. SOP Specific Conformance for Storage SOP Classes

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

No data elements are discarded or coerced by the Send Image AE.

##### 4.2.7.3.2.3.1. Dataset Specific Conformance for C-STORE-RQ

Detail regarding the Dataset Specific response behavior will be reported in this section.
This includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Possible status responses during C-STORE request are listed in the next table:

**Table 167: DICOM command response status handling behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Successful stored | Log; continue. |
| Refused | A700 | Refused: Out of Resources | Log; continue. |

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Failure | 0110 | Error: Processing Failure | Log; continue. |
| | A900 | Error: Data Set does not match SOP Class | Log; continue. |
| | C000 | Error: cannot understand | Log; continue. |
| Warning | B000 | Coercion of Data Elements | Log; continue. |
| | B007 | Data Set does not match SOP Class | Log; continue. |
| | B006 | Elements Discarded | Log; continue. |

**Exceptions:**
1. The clinical user cancels the 'Send' request. If the request is already active, the store connection will be closed and no more data will be sent. If the request is not active yet, no connection will be initiated and no data will be sent.
2. If, after setting up the connection, no data can be sent to the external DICOM node, for 2 minutes, IntelliSpace Cardiovascular will retry once and then it will abort the connection. IntelliSpace Cardiovascular reports an error.
3. If an error occurs on IntelliSpace Cardiovascular while setting up the connection, IntelliSpace Cardiovascular aborts and reports an error.
4. If an error occurs on the external DICOM node while setting up the connection, IntelliSpace Cardiovascular will aborts all actions related to that connection. IntelliSpace Cardiovascular reports an error.
5. If no agreement between the two parties can be reached concerning communication parameters the connection will be closed and no data transfer will take place. IntelliSpace Cardiovascular reports an error.
6. When a network error occurs during connection set up or during data transfer, IntelliSpace Cardiovascular will abort all actions related to the connection and reports an error.
7. If an error occurs on IntelliSpace Cardiovascular during data transfer, IntelliSpace Cardiovascular will notify the external DICOM node of this problem and after that close the connection. IntelliSpace Cardiovascular reports an error.
8. If an error occurs on the external DICOM node during data transfer, this causes the connection to be aborted. IntelliSpace Cardiovascular reports an error.

**Notes:**
1. If the Institution Name is present in private DICOM object data it is taken from there (this only applies for CD import) If not - step 2.
2. If HIS is present and "resolve institution from HIS configured", then it is taken from HIS. If not - step 3.
3. If DICOM tag - Issuer of Patient ID (0010, 0021) in the Patient Identification Module - is not empty, Institution Name is taken from there. If not - step 4.
4. Institution Name is taken from the configuration data - default institution per AE_TITLE defined in the Service Tool (DICOM import page).

During DICOM based store, transfer negotiations may indicate that the original format of the data is not accepted by the target node. In such cases, the remote store server will try to apply one of the transfer syntax conversions indicated by '+', in order to get to transfer syntax that is supported by the external system. The Transfer syntax conversion is supported from SCU to SCP.

| Source Syntax | Destination Syntax | | |
|---|---|---|---|
| | ILE | ELE | EBE |
| ILE | - | + | + |
| ELE | + | - | + |
| EBE | + | + | - |
| JPEG Baseline | - | - | - |
| JPEG Lossless FOP Non-Hierarchical 14 | + | + | + |
| RLE | + | + | + |

**Figure 26: Transfer Syntax Conversion from Source to Destination**

No data elements are discarded or coerced by the Archive AE.

The list of updated patient and study attributes are mentioned in the tables below.

**Table 168: List of updated Patient Attributes**

| Attribute | DICOM Tag |
|---|---|
| Last Name | Part of (0010,0010) |
| First name | Part of (0010,0010) |
| Middle name | Part of (0010,0010) |
| Date of birth | (0010,0030) |
| Sex | (0010,0040) |
| Issuer of Patient ID | (0010,0021) |
| MRN | (0010,0020) |
| Alternate ID# | (0010,1000) |
| Title | Part of (0010,0010) |
| Honorific | Part of (0010,0010) |
| Address 1 | Part of (0010,1040) |
| Address 2 (if Address1 is empty) | Part of (0010,1040) |
| City | Part of (0010,1040) |
| State/Province | (0010,2152) |
| Postal code | Part of (0010,1040) |
| Country | (0010,2160) |
| Race | Part of (0010,2154) |
| Home phone | Part of (0010,2154) |
| Business phone | Part of (0010,2154) |
| Mobile phone | Part of (0010,2154) |

**Table 169: List of updated Study Attributes**

| Attribute | DICOM Tag |
|---|---|
| Study Description | (0008 ,1030) |
| Accession Number | (0008,0050) |
| Body Part | (0018,0015) |
| Protocol Name | (0018,1030) |
| Admitting Diagnoses Description | (0008,1080) |
| Performed By | (0008,1050) |
| Reading Physician | (0008,1060) |
| Ordering Physician | (0032,1032) |
| Reviewer | (300E,0008) |
| Referring Physician | (0008,0090) |
| Institution Department Name | (0008,1040) |
| Station Name | (0008,1010) |
| Study Comments | (0032,4000) |

Possible communication failures during the C-STORE request are listed her:

**Table 170: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| Timeout | The association is closed and the reason is logged. |
| Association aborted | The association is closed and the reason is logged. |

#### 4.2.7.4. Association Acceptance Policy

Not applicable, the Send AE doesn't accept any associations.

## 4.2.8. Storage Commitment AE

Detail of this specific Application Entity is specified in this section.

### 4.2.8.1. SOP Classes

IntelliSpace Cardiovascular will support DICOM Storage Commitment as SCP, only for asynchronous workflow. The C-STORE, N-ACTION and N-EVENT-REPORT will be handled in a separate association. In the next sections the storage commitment behavior of IntelliSpace Cardiovascular will be explained in detail.

This Storage Commitment Application Entity provides Standard Conformance to the following SOP Classes.

**Table 171: SOP Classes for Storage Commitment AE**

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Verification SOP Class | 1.2.840.10008.1.1 | No | Yes |
| Storage Commitment Push Model SOP Class | 1.2.840.10008.1.20.1 | No | Yes |

Note that any SOP specific behavior is documented later in this conformance statement in the applicable SOP class specific conformance section.

### 4.2.8.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

#### 4.2.8.2.1. General

The DICOM standard application context is specified below.

**Table 172: DICOM Application Context**

| Description | Value |
|---|---|
| Application Context Name | 1.2.840.10008.3.1.1.1 |

#### 4.2.8.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as an Initiator or Acceptor is specified here.

For the verification service only one can be handled at a time.

**Table 173: Number of associations as an Association Initiator for this AE**

| Description | Value |
|---|---|
| Maximum number of simultaneous associations | Limit of system resource |

#### 4.2.8.2.3. Asynchronous Nature

The implementation supports negotiation of multiple outstanding transactions, along with the maximum number of outstanding transactions supported.

**Table 174: Asynchronous nature as an Association Initiator for this AE**

| Description | Value |
|---|---|
| Maximum number of outstanding asynchronous transactions | Limit of system resource |

#### 4.2.8.2.4. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

**Table 175: DICOM Implementation Class and Version for Storage Commitment AE**

| | |
|---|---|
| Implementation Class UID | 1.3.46.670589.16.14.4.1.1 |
| Implementation Version Name | ISCV R1.1.L1 |

#### 4.2.8.2.5. Communication Failure Handling

The behavior of the AE during communication failure is summarized in the next table.

**Table 176: Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| ARTIM Timeout | The association is closed and the reason is logged. |

### 4.2.8.3. Association Initiation Policy

Not applicable, Storage Commitment AE does not initiate any associations.

#### 4.2.8.4. Association Acceptance Policy

The Application Entity may reject Association attempts as shown in the table below.

**Table 177: Association Reject Reasons**

| Result | Source | Reason/Diagnosis | Behavior |
|---|---|---|---|
| 1 - rejected permanent | 1 - DICOM UL service-user | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - application-context-name-not-supported | The user is informed. Details are logged in central log file. |
| | | 3 - calling-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | | 7 - called-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | 2 - DICOM UL service provider (ACSE related function) | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - protocol-version-not-supported | The user is informed. Details are logged in central log file. |
| | 3 - DICOM UL service provider (Presentation related function) | 1 - temporary-congestion | The user is informed. Details are logged in central log file. |
| | | 2 - local-limit-exceeded | The user is informed. Details are logged in central log file. |
| 2 - rejected-transient | 1 - DICOM UL service-user | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - application-context-name-not-supported | The user is informed. Details are logged in central log file. |
| | | 3 - calling-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | | 7 - called-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | 2 - DICOM UL service provider (ACSE related function) | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - protocol-version-not-supported | The user is informed. Details are logged in central log file. |
| | 3 - DICOM UL service provider (Presentation related function) | 1 - temporary-congestion | The user is informed. Details are logged in central log file. |
| | | 2 - local-limit-exceeded | The user is informed. Details are logged in central log file. |

The behavior of the AE for sending an association abort is summarized in next table.

**Table 178: Association Abort Policies**

| Source | Reason/Diagnosis | Behavior |
|---|---|---|
| 0 - DICOM UL service-user (initiated abort) | 0 - reason-not-specified | Notifies Remote AE, terminates the connection and logs the event. |
| 2 - DICOM UL service-provider (initiated abort) | 0 - reason-not-specified | Notifies Remote AE, terminates the connection and logs the event. |
| | 1 - unrecognized-PDU | Notifies Remote AE, terminates the connection and logs the event. |
| | 2 - unexpected-PDU | Notifies Remote AE, terminates the connection and logs the event. |
| | 4 - unrecognized-PDU parameter | Notifies Remote AE, terminates the connection and logs the event. |

| Source | Reason/Diagnosis | Behavior |
|---|---|---|
| | 5 - unexpected-PDU parameter | Notifies Remote AE, terminates the connection and logs the event. |
| | 6 - invalid-PDU-parameter value | Notifies Remote AE, terminates the connection and logs the event. |

#### 4.2.8.4.1. (Real-World) Activity – Verification as SCP

##### 4.2.8.4.1.1. Description and Sequencing of Activities

The Storage Commitment AE as SCP AE accepts associations from systems that wish to verify application level communication using the C-ECHO command.

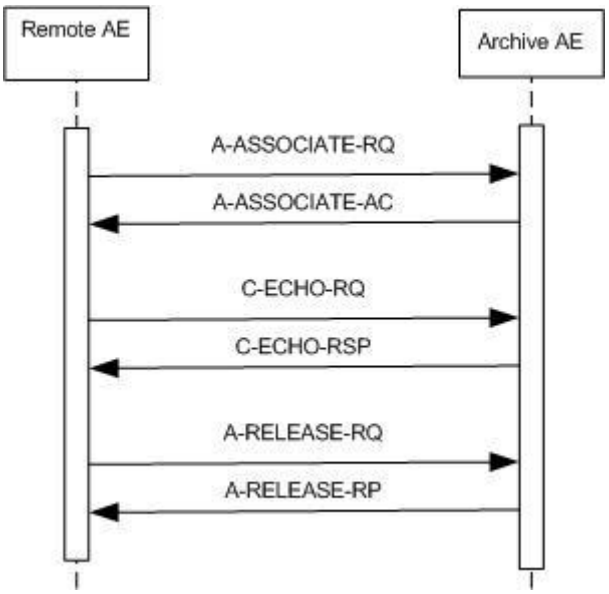


**Figure 27: (Real-World) Activity – Verification as SCP**

##### 4.2.8.4.1.2. Accepted Presentation Contexts

The presentation contexts are defined in the next table.

**Table 179: Acceptable Presentation Contexts for (Real-World) Activity – Verification as SCP**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Verification SOP Class | 1.2.840.10008.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

##### 4.2.8.4.1.3. SOP Specific Conformance for Verification SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

The Storage Commitment AE provides standard conformance to the verification SOP class.

#### 4.2.8.4.1.3.1. Dataset Specific Conformance for Verification C-ECHO SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 180: DICOM command response status handling behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Success, Confirmation | The SCU has successfully send C-ECHO. |
| Failure | <>0000 | Problems with sending the C-ECHO | The SCU failed to send the C-ECHO; user is notified. The reason is logged. |

### 4.2.8.4.2. (Real-World) Activity – Storage Commitment Push Model AS SCP

#### 4.2.8.4.2.1. Description and Sequencing of Activities

IntelliSpace Cardiovascular will support DICOM Storage commitment as SCP, only for asynchronous workflow. The C-STORE, N-ACTION and N-EVENT-REPORT will be handled in a separate association.

**Normal Flow of Events:**
1. The external DICOM node set up storage commit request connection and negotiates communication parameters with the IntelliSpace Cardiovascular server.
2. After the connection is setup, the external DICOM node sends a storage commit request for the data, where the responsibility has to be taken over by the IntelliSpace Cardiovascular server.
3. The IntelliSpace Cardiovascular server responds to the external DICOM node that the request is correctly received.
4. The external DICOM node will close the connection.

**When the data is correctly archived (archived and verified):**
1. The IntelliSpace Cardiovascular server set up storage commit response connection and negotiates communication parameters with the external DICOM node that made the request.
2. It could also response when it is only present on the repository (configuration option).
3. After the connection is setup, the IntelliSpace Cardiovascular server sends the storage commit response, for the request it received, to the external DICOM node.
4. The IntelliSpace Cardiovascular server will close the connection.

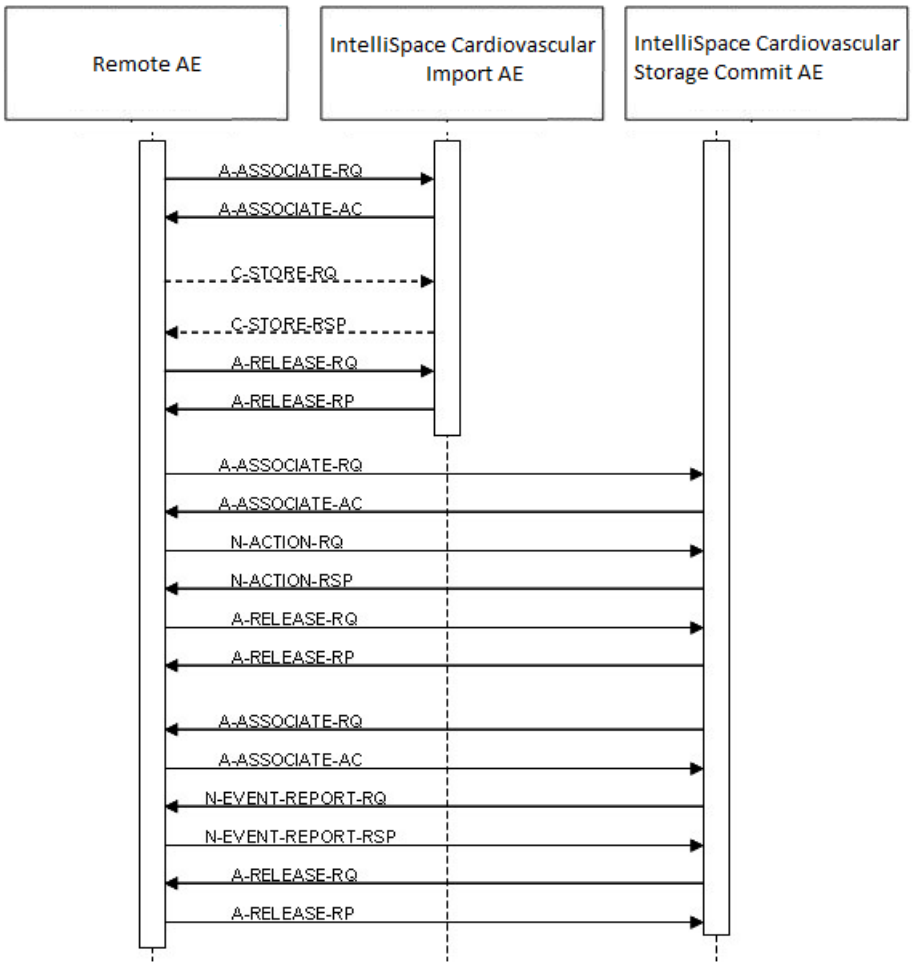


**Figure 28: (Real World) Activity - Storage Commitment Push Model as SCP**

#### 4.2.8.4.2.2. Accepted Presentation Contexts

The presentation contexts are defined in the next table.

**Table 181: Acceptable Presentation Contexts for (Real-World) Activity – Storage Commitment Push Model AS SCP**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Storage Commitment Push Model SOP Class | 1.2.840.10008.1.20.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

#### 4.2.8.4.2.3. SOP Specific Conformance for Storage Commitment Push Model SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

#### 4.2.8.4.2.3.1. Dataset Specific Conformance for Storage Commitment Push Model SOP Class N-EVENT-REPORT-SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

The Storage Commitment AE accepts all contexts in the intersection of the proposed and acceptable Presentation Context. This means that the Storage Commitment AE will accept multiple proposed Presentation Contexts with the same SOP Class but different Transfer Syntaxes, so there will be no checks for duplicate Presentation Contexts.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 182: Status Response**

| Service Status | Error Code | Further Meaning | Description |
|---|---|---|---|
| Success | 0000 | Success | The storage commitment result has been successfully received. continue |
| Error | 0110 | Processing Failure | Send notification; Log. |

**Table 183: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| Timeout | The association is closed and the reason is logged. |
| Association aborted | The association is closed and the reason is logged. |

#### 4.2.8.4.2.3.2. Dataset Specific Conformance for Storage Commitment Push Model SOP Class N-ACTION-SCP

All details regarding the specific conformance, including response behavior to all status codes, both from an application level and communication errors are provided in following tables for N-ACTION.

**Table 184: Storage Commitment Attribute for N-ACTION-RSP**

| Attribute Name | Tag | Comment |
|---|---|---|
| **Storage Commitment Module** | | |
| Transaction UID | 0008,1195 | |
| Referenced SOP Sequence | 0008,1199 | |
| >Referenced SOP Class UID | 0008,1150 | |
| >Referenced SOP Instance UID | 0008,1155 | |

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 185: Status Response**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Operation complete | The request for storage commitment is considered successfully stored. |
| Other than Success | <>0000 | Problems with sending the N-ACTION Request | The request for storage commitment is marked as failed. The reason is logged. |

**Table 186: DICOM Command Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| ARTIM Time-out | The reason is logged. |
| Reply Time-out | The association is released. Continues with waiting for storage commitment. |

| Exception | Behavior |
|---|---|
| Association Time-out SCU | The association is released. Continues with waiting for storage commitment. |
| Association aborted | Continues with waiting for storage commitment. |

**Exceptions:**

1. Not correctly archived within the verify delay + 8 hours, IntelliSpace Cardiovascular responds with a failure.
2. All instances in the request have to be correctly archived, when one of them fails, the response will be reported with failure. Within the verify delay + 8 hours, IntelliSpace Cardiovascular responds with a failure.
3. If no agreement between the two parties can be reached concerning (DICOM) communication parameters the connection will be closed and no data transfer will take place. IntelliSpace Cardiovascular will retry 72 hours to send a response.
4. IntelliSpace Cardiovascular will close the connection if no data is received within 2 minutes after the setup.
5. If a network error occurs during set up of a connection or during data transfer, this is reported. IntelliSpace Cardiovascular will abort the connection and data transfer will not be completed.
6. If an error occurs on IntelliSpace Cardiovascular during data transfer, IntelliSpace Cardiovascular will notify the external DICOM node of this problem and after that close the connection. IntelliSpace Cardiovascular reports an error.
7. If an error occurs on the external DICOM node during data transfer, this causes the connection to be aborted. IntelliSpace Cardiovascular reports an error.

## 4.2.9. PDF_REPORT AE

Detail of this specific Application Entity is specified in this section.

### 4.2.9.1. SOP Classes

PDF_REPORT AE, for its functioning, makes use of following DICOM functions:

- Storage as SCU, which uses C-STORE as service element.

The PDF_REPORT AE is an internal AE that exports the Encapsulated PDF Instances to Archive AE that deals with IntelliSpace Cardiovascular Database.

This Application Entity provides Standard Conformance to the following SOP Classes.

**Table 187: SOP Classes for Send AE**

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Encapsulated PDF Storage | 1.2.840.10008.5.1.4.1.1.104.1 | Yes | No |

Note: Any SOP specific behavior is documented later in the conformance statement in the applicable SOP specific conformance section.

### 4.2.9.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

#### 4.2.9.2.1. General

The DICOM standard application context is specified below.

**Table 188: DICOM Application Context**

| Description | Value |
|---|---|
| Application Context Name | 1.2.840.10008.3.1.1.1 |

#### 4.2.9.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as an Initiator or Acceptor is specified here.

For IntelliSpace Cardiovascular the maximum number of associations limited by the availability of the system resources. The license number of the external DICOM nodes is one of these limits.

**Table 189: Number of associations as an Association Initiator for this AE**

| Description | Value |
|---|---|
| Maximum number of simultaneous associations | 5 |

#### 4.2.9.2.3. Asynchronous Nature

The implementation supports negotiation of multiple outstanding transactions, along with the maximum number of outstanding transactions supported.

**Table 190: Asynchronous nature as an Association Initiator for this AE**

| Description | Value |
|---|---|
| Maximum number of outstanding asynchronous transactions | Not applicable |

#### 4.2.9.2.4. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

**Table 191: DICOM Implementation Class and Version for Send AE**

| | |
|---|---|
| Implementation Class UID | 1.3.46.670589.16.14.4.1.1 |
| Implementation Version Name | ISCV R1.1.L1 |

#### 4.2.9.2.5. Communication Failure Handling

The behavior of the AE during communication failure is summarized in the next table.

**Table 192: Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| ARTIM Timeout | The association is closed and the reason is logged. |

#### 4.2.9.3. Association Initiation Policy

The Application Entity will respond on a received reject Association attempt as shown in next table.

**Table 193: Association Rejection response**

| Result | Source | Reason/Diagnosis | Behavior |
|---|---|---|---|
| 1 - rejected-permanent | 1 - DICOM UL service-user | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - application-context-name-not supported | The user is informed. Details are logged in central log file. |
| | | 3 - calling-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | | 7 - called-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | 2 - DICOM UL service-provider (ACSE related function) | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - protocol-version-not-supported | The user is informed. Details are logged in central log file. |
| | 3 - DICOM UL service-provider (Presentation related function) | 1 - temporary-congestion | The user is informed. Details are logged in central log file. |
| | | 2 - local-limit-exceeded | The user is informed. Details are logged in central log file. |
| 2 - rejected-transient | 1 - DICOM UL service-user | 1 - no-reason-given | The user is informed. Details are logged in central log file. |
| | | 2 - application-context-name-not-supported | The user is informed. Details are logged in central log file. |
| | | 3 - calling-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | | 7 - called-AE-title-not-recognized | The user is informed. Details are logged in central log file. |
| | 2 - DICOM UL service-provider (ACSE related function) | 1 - no-reason-given | The user is informed. Details are logged in central log file. |

| Result | Source | Reason/Diagnosis | Behavior |
|---|---|---|---|
| | | 2 - protocol-version-not-supported | The user is informed. Details are logged in central log file. |
| | 3 - DICOM UL service-provider (Presentation related function) | 1 - temporary-congestion | The user is informed. Details are logged in central log file. |
| | | 2 - local-limit-exceeded | The user is informed. Details are logged in central log file. |

The behavior of the AE on receiving an association abort is summarized in the next table.

**Table 194: Association Abort Handling**

| Source | Reason/Diagnosis | Behavior |
|---|---|---|
| 0 - DICOM UL service-user (initiated abort) | 0 - reason-not-specified | When received, terminates the connection and logs the event. |
| 2 - DICOM UL service-provider (initiated abort) | 0 - reason-not-specified | When received, terminates the connection and logs the event. |
| | 1 - unrecognized-PDU | When received, terminates the connection and logs the event. |
| | 2 - unexpected-PDU | When received, terminates the connection and logs the event. |
| | 4 - unrecognized-PDU-parameter | When received, terminates the connection and logs the event. |
| | 5 - unexpected-PDU-parameter | When received, terminates the connection and logs the event. |
| | 6 - invalid-PDU-parameter-value | When received, terminates the connection and logs the event. |

#### 4.2.9.3.1. (Real-World) Activity – Image Export

##### 4.2.9.3.1.1. Description and Sequencing of Activities

##### 4.2.9.3.1.2. Proposed Presentation Contexts

The proposed presentation contexts are defined in the next table.

**Table 195: Proposed Presentation Contexts for (Real-World) Activity – Image Export**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Encapsulated PDF Storage | 1.2.840.10008.5.1.4.1.1.104.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

##### 4.2.9.3.1.3. SOP Specific Conformance for Storage SOP Classes

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

###### 4.2.9.3.1.3.1. Dataset Specific Conformance for C-STORE-RQ

Detail regarding the Dataset Specific response behavior will be reported in this section.
This includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Possible status responses during C-STORE request are listed in the next table:

**Table 196: DICOM command response status handling behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Successful stored | Log; continue. |
| Refused | A700 | Refused: Out of Resources | Log; continue. |
| Failure | 0110 | Error: Processing Failure | Log; continue. |
| | A900 | Error: Data Set does not match SOP Class | Log; continue. |
| | C000 | Error: cannot understand | Log; continue. |
| Warning | B000 | Coercion of Data Elements | Log; continue. |
| | B007 | Data Set does not match SOP Class | Log; continue. |
| | B006 | Elements Discarded | Log; continue. |

#### 4.2.9.4. Association Acceptance Policy

Not applicable, the PDF_REPORT AE doesn't accept any associations.

## 4.2.10. MWL AE

Detail of this specific Application Entity is specified in this section.

### 4.2.10.1. SOP Classes

This Application Entity provides Standard Conformance to the following SOP Classes.

**Table 197: SOP Classes for MWL AE**

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Verification SOP Class | 1.2.840.10008.1.1 | No | Yes |
| Modality Worklist Information Model - FIND SOP Class | 1.2.840.10008.5.1.4.31 | No | Yes |

Note: Any SOP specific behavior is documented later in the conformance statement in the applicable SOP specific conformance section.

### 4.2.10.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

#### 4.2.10.2.1. General

The DICOM standard application context is specified below.

**Table 198: DICOM Application Context**

| Description | Value |
|---|---|
| Application Context Name | 1.2.840.10008.3.1.1.1 |

#### 4.2.10.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as an Initiator or Acceptor is specified here.

**Table 199: Number of associations as an Association Initiator for this AE**

| Description | Value |
|---|---|
| Maximum number of simultaneous associations | 1 |

**Table 200: Number of associations as an Association Acceptor for this AE**

| Description | Value |
|---|---|
| Maximum number of simultaneous associations | 1 |

#### 4.2.10.2.3. Asynchronous Nature

The implementation supports negotiation of multiple outstanding transactions, along with the maximum number of outstanding transactions supported.

**Table 201: Asynchronous nature as an Association Initiator for this AE**

| Description | Value |
|---|---|
| Maximum number of outstanding asynchronous transactions | 1 |

#### 4.2.10.2.4. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

**Table 202: DICOM Implementation Class and Version for MWL AE**

| | |
|---|---|
| Implementation Class UID | 1.3.46.670589.49.1.1.1 |
| Implementation Version Name | IBE_1_1_1 |

#### 4.2.10.2.5. Communication Failure Handling

The behavior of the AE during communication failure is summarized in the next table.

**Table 203: Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| Timeout | IntelliBridge considers an ARTIM Timeout of **30 seconds** as a communication failure |
| e.g. Association aborted | |
| e.g. Failed to connect | |

### 4.2.10.3. Association Initiation Policy

The behavior of this Application Entity is summarized in the next Table.

**Table 204: Response Status Handler Behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | e.g. Matching is complete | e.g. The SCP has successfully returned all matching information e.g. |
| Refused | | | e.g. The SCP has successfully returned all matching information |
| Error | | | |
| Warning | | | |
| Pending | | | |
| Cancel | | | |

The Application Entity will respond to a received Association rejection as shown in the next table.

**Table 205: Association Rejection response**

| Result | Source | Reason/Diagnosis | Behavior |
|---|---|---|---|
| 1 - rejected-permanent | 1 - DICOM UL service-user | 1 - no-reason-given | |
| | | 2 - application-context-name-not supported | |
| | | 3 - calling-AE-title-not-recognized | |
| | | 7 - called-AE-title-not-recognized | |
| | 2 - DICOM UL service-provider (ACSE related function) | 1 - no-reason-given | |
| | | 2 - protocol-version-not-supported | |
| | 3 - DICOM UL service-provider | 1 - temporary-congestion | |

| Result | Source | Reason/Diagnosis | Behavior |
|---|---|---|---|
| | (Presentation related function) | 2 - local-limit-exceeded | |
| 2 - rejected-transient | 1 - DICOM UL service-user | 1 - no-reason-given | |
| | | 2 - application-context-name-not-supported | |
| | | 3 - calling-AE-title-not-recognized | |
| | | 7 - called-AE-title-not-recognized | |
| | 2 - DICOM UL service-provider (ACSE related function) | 1 - no-reason-given | |
| | | 2 - protocol-version-not-supported | |
| | 3 - DICOM UL service-provider (Presentation related function) | 1 - temporary-congestion | |
| | | 2 - local-limit-exceeded | |

The behavior of the AE on receiving an Association abort is summarized in the next table.

**Table 206: Association Abort Handling**

| Source | Reason/Diagnosis | Behavior |
|---|---|---|
| 0 - DICOM UL service-user (initiated abort) | 0 - reason-not-specified | |
| 2 - DICOM UL service-provider (initiated abort) | 0 - reason-not-specified | |
| | 1 - unrecognized-PDU | |
| | 2 - unexpected-PDU | |
| | 4 - unrecognized-PDU-parameter | |
| | 5 - unexpected-PDU-parameter | |
| | 6 - invalid-PDU-parameter-value | |

#### 4.2.10.3.1. (Real-World) Activity – Verification as SCP

##### 4.2.10.3.1.1. Description and Sequencing of Activities

The MWL AE receives application level communication using the C-ECHO command.

**Figure 29: (Real World) Activity - Verification as SCP**

##### 4.2.10.3.1.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

**Table 207: Proposed Presentation Contexts for (Real-World) Activity – Verification as SCP**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Verification SOP Class | 1.2.840.10008.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP Role: 1<br>SCU Role: 1 | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

##### 4.2.10.3.1.3. SOP Specific Conformance for Verification SOP Class

The MWL AE provides standard conformance to Verification SOP Class.

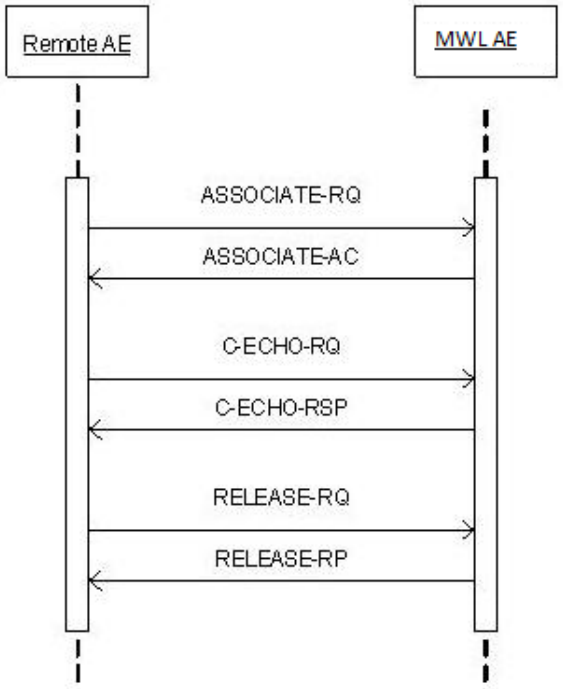


**Table 208: Status Response**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Matching is complete | Association will be released. Message logged in IntelliSpace Cardiovascular Connect |
| Failure | A900 | Identifier does not match SOP Class | Reason will be logged |

**Table 209: DICOM Command Communication Failure Behavior**

| Exception | Description |
|---|---|
| REPLAY TIMEOUT | Reason will be logged |
| ASSOCIATION ABORTED | Reason will be logged |
| ASSOCIATION TIMEOUT | Reason will be logged |

#### 4.2.10.3.2. (Real-World) Activity – Modality Worklist as SCP

##### 4.2.10.3.2.1. Description and Sequencing of Activities

MWL SCP accepts associations from systems that wish to have an up-to-date Modality Worklist using the C-FIND Service Element.

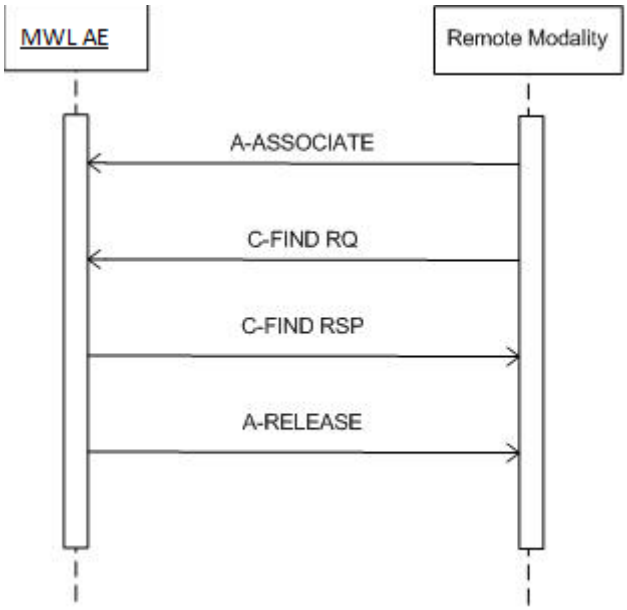


**Figure 30: (Real World) Activity - Modality Worklist as SCP**

#### 4.2.10.3.2.2. Accepted Presentation Contexts

MWL SCP will accept the presentation contexts as given in the table below.

**Table 210: Acceptable Presentation Contexts for (Real-World) Activity – Modality worklist as SCP**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Modality Worklist Information Model - C-FIND SOP Class | 1.2.840.10008.5.1.4.31 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

#### 4.2.10.3.2.3. SOP Specific Conformance for Modality Worklist Information Model C-FIND SOP Class

This section and sub-section includes the manufacturer SOP and Dataset specific information as well as the status codes and their corresponding behavior.

##### 4.2.10.3.2.3.1. Dataset Specific Conformance for Modality Worklist Information Model C-FIND SCP

The supported C-Find request keys and the DICOM command communication behavior are shown in the following tables. The standard as well as the specific status codes and their corresponding behavior are also specified.

### Table 211: Modality Worklist Return keys supported

| Attribute Name | Tag | VR | Remark/ Comment | Matching Key Supported | Return Key Supported |
|---|---|---|---|---|---|
| **SOP Common Module** | | | | | |
| Specific Character Set | 0008,0005 | CS | Always return the values in ISO_IR100 | N | Y |
| Timezone Offset From UTC | 0008,0201 | SH | | Y | N |
| **Patient Identification Module** | | | | | |
| Patient's Name | 0010,0010 | PN | Returns Value. Type of Matching:S,*,U | Y | Y |
| Patient ID | 0010,0020 | LO | Returns Value. Type of Matching:S,*,U | Y | Y |
| Issuer of Patient ID | 0010,0021 | LO | Returns value. Type of Matching :S,*,U | Y | Y |
| **Patient Demographic Module** | | | | | |
| Patient's Birth Date | 0010,0030 | DA | | Y | Y |
| Patient's Sex | 0010,0040 | CS | Returns value. Type of Matching :S,U | Y | Y |
| Patient's Size | 0010,1020 | DS | Returns value. | N | Y |
| Patient's Weight | 0010,1030 | DS | Returns value. | N | Y |
| Confidentiality Constraint on Patient Data Description | 0040,3001 | LO | Returns Empty | N | Y |
| **Patient Medical Module** | | | | | |
| Medical Alerts | 0010,2000 | LO | Returns Empty | N | Y |
| Contrast Allergies | 0010,2110 | LO | Returns Empty | N | Y |
| Pregnancy Status | 0010,21C0 | US | Returns Empty | N | Y |
| Special Needs | 0038,0050 | LO | Returns Empty | N | Y |
| Patient State | 0038,0500 | LO | Returns Empty | N | Y |
| **Visit Relationship Module** | | | | | |
| Referenced Patient Sequence | 0008,1120 | SQ | Sequence is returned empty | N/A | Y |
| > Referenced SOP Class UID | 0008,1150 | UI | | N | N |
| > Referenced SOP Instance UID | 0008,1155 | UI | | N | N |
| **Visit Identification Module** | | | | | |
| Admission ID | 0038,0010 | LO | Returns Empty | N | Y |
| **Visit Status Module** | | | | | |
| Current Patient Location | 0038,0300 | LO | Returns Value | N | Y |
| Visit Status ID | 0038,0008 | CS | Returns value. | N | Y |
| **Scheduled Procedure Step Module** | | | | | |
| Scheduled Procedure Step Sequence | 0040,0100 | SQ | The Attributes of the Scheduled Procedure Step shall only be retrieved with Sequence Matching. The Scheduled Procedure Step Sequence shall contain only a single Item. | N/A | N/A |
| > Modality | 0008,0060 | CS | Returns Value. Type of Matching :S,U. | Y | Y |
| > Scheduled Station AE Title | 0040,0001 | AE | Mapped in Rhapsody Table ModalityExamCode_Mapping | Y | Y |
| > Scheduled Procedure Step Start Date | 0040,0002 | DA | SPS Time matching only supported when SPS Date is provided as matching key | Y | Y |
| > Scheduled Procedure Step Start Time | 0040,0003 | TM | | Y | Y |
| > Scheduled Performing Physician's Name | 0040,0006 | PN | | Y | Y |

| Attribute Name | Tag | VR | Remark/ Comment | Matching Key Supported | Return Key Supported |
|---|---|---|---|---|---|
| > Scheduled Procedure Step Description | 0040,0007 | LO | | N | Y |
| > Scheduled Protocol Code Sequence | 0040,0008 | SQ | | N/A | Y |
| >> Code Value | 0008,0100 | SH | | Y | Y |
| >> Coding Scheme Designator | 0008,0102 | SH | | N | Y |
| >> Code Meaning | 0008,0104 | LO | | N | Y |
| > Scheduled Procedure Step ID | 0040,0009 | SH | | N | Y |
| > Scheduled Station Name | 0040,0010 | SH | Copied from Scheduled Station AE Title. | N | Y |
| > Scheduled Procedure Step Location | 0040,0011 | SH | Returns Empty | N | Y |
| > Scheduled Procedure Step Status | 0040,0020 | CS | Currently, only one value supported is “SCHEDULED”. | N | Y |
| **Requested Procedure Module** | | | | | |
| Referenced Study Sequence | 0008,1110 | SQ | Returns Empty | N/A | Y |
| > Referenced SOP Class UID | 0008,1150 | UI | 1.2.840.10008.3.1.2.3.1 | N | N |
| > Referenced SOP Instance UID | 0008,1155 | UI | | N | N |
| Study Instance UID | 0020,000D | UI | | N | Y |
| Requested Procedure Description | 0032,1060 | LO | | Y | Y |
| Requested Procedure Code Sequence | 0032,1064 | SQ | | N/A | Y |
| > Code Value | 0008,0100 | SH | | N | Y |
| > Coding Scheme Designator | 0008,0102 | SH | | N | Y |
| > Code Meaning | 0008,0104 | LO | | N | Y |
| Requested Procedure ID | 0040,1001 | SH | Returns Value. Type of Matching: S,U | Y | Y |
| Reason for the Requested Procedure | 0040,1002 | LO | | N | Y |
| Requested Procedure Priority | 0040,1003 | SH | Returns Empty | N | Y |
| Patient Transport Arrangements | 0040,1004 | LO | Returns Empty | N | Y |
| **Imaging Service Request Module** | | | | | |
| Accession Number | 0008,0050 | SH | | Y | Y |
| Referring Physician's Name | 0008,0090 | PN | Returns the value.<br>Type of Matching : S,U. | Y | Y |
| Requesting Physician | 0032,1032 | PN | Returns Empty | N | Y |

**Notes:**

Keys that are specified in the C-FIND-RQ but are not supported by the MWL AE and are type 2 or 3 are returned empty.

**Table 212: Status Response**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Matching is complete | A response is sent with this status code. |
| Refused | A700 | Out of Resources | A response is sent with this status code. Reason is Logged and released association. |
| Failure | C000 | Unable to process | A response is send with this status code. The reason is logged in the file. |
| Pending | FF00 | Current match is supplied | Matches are continuing; Current match is supplied. |
| Cancel | FE00 | Matching terminated due to Cancel Request | No more C-FIND pending responses will be sent and a final response with this status code is sent. Cancel request is logged. |

**Table 213: Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| Timeout | The association is released and the reason is logged |
| Association Aborted | The association is released and the reason is logged |

## 4.2.11. MPPS AE

Detail of this specific Application Entity is specified in this section.

### 4.2.11.1. SOP Classes

This Application Entity provides Standard Conformance to the following SOP Classes.

**Table 214: SOP Classes for MPPS AE**

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Verification SOP Class | 1.2.840.10008.1.1 | No | Yes |
| Modality Performed Procedure Step SOP Class | 1.2.840.10008.3.1.2.3.3 | Yes | Yes |

Note: Any SOP specific behavior is documented later in the conformance statement in the applicable SOP specific conformance section.

### 4.2.11.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

#### 4.2.11.2.1. General

The DICOM standard application context is specified below.

**Table 215: DICOM Application Context**

| Description | Value |
|---|---|
| Application Context Name | 1.2.840.10008.3.1.1.1 |

#### 4.2.11.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as an Initiator or Acceptor is specified here.

**Table 216: Number of associations as an Association Initiator for this AE**

| Description | Value |
|---|---|
| Maximum number of simultaneous associations | 1 |

**Table 217: Number of associations as an Association Acceptor for this AE**

| Description | Value |
|---|---|
| Maximum number of simultaneous associations | 1 |

#### 4.2.11.2.3. Asynchronous Nature

The implementation supports negotiation of multiple outstanding transactions, along with the maximum number of outstanding transactions supported.

**Table 218: Asynchronous nature as an Association Initiator for this AE**

| Description | Value |
|---|---|
| Maximum number of outstanding asynchronous transactions | 1 |

#### 4.2.11.2.4. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

**Table 219: DICOM Implementation Class and Version for MPPS AE**

| | |
|---|---|
| Implementation Class UID | 1.3.46.670589.49.1.1.1 |
| Implementation Version Name | IBE_1_1_1 |

#### 4.2.11.2.5. Communication Failure Handling

The behavior of the AE during communication failure is summarized in the next table.

**Table 220: Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| Timeout | IntelliBridge considers an ARTIM Timeout of **30 seconds** as a communication failure |
| e.g. Association aborted | |
| e.g. Failed to connect | |

### 4.2.11.3. Association Initiation Policy

The behavior of this Application Entity is summarized in the next Table.

**Table 221: Response Status Handler Behavior**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | e.g. Matching is complete | e.g. The SCP has successfully returned all matching information e.g. |
| Refused | | | e.g. The SCP has successfully returned all matching information |
| Error | | | |
| Warning | | | |
| Pending | | | |
| Cancel | | | |

The Application Entity will respond to a received Association rejection as shown in the next table.

**Table 222: Association Rejection response**

| Result | Source | Reason/Diagnosis | Behavior |
|---|---|---|---|
| 1 - rejected-permanent | 1 - DICOM UL service-user | 1 - no-reason-given | |
| | | 2 - application-context-name-not supported | |
| | | 3 - calling-AE-title-not-recognized | |
| | | 7 - called-AE-title-not-recognized | |

| Result | Source | Reason/Diagnosis | Behavior |
|---|---|---|---|
| | 2 - DICOM UL service-provider (ACSE related function) | 1 - no-reason-given | |
| | | 2 - protocol-version-not-supported | |
| | 3 - DICOM UL service-provider (Presentation related function) | 1 - temporary-congestion | |
| | | 2 - local-limit-exceeded | |
| 2 - rejected-transient | 1 - DICOM UL service-user | 1 - no-reason-given | |
| | | 2 - application-context-name-not-supported | |
| | | 3 - calling-AE-title-not-recognized | |
| | | 7 - called-AE-title-not-recognized | |
| | 2 - DICOM UL service-provider (ACSE related function) | 1 - no-reason-given | |
| | | 2 - protocol-version-not-supported | |
| | 3 - DICOM UL service-provider (Presentation related function) | 1 - temporary-congestion | |
| | | 2 - local-limit-exceeded | |

The behavior of the AE on receiving an Association abort is summarized in the next table.

**Table 223: Association Abort Handling**

| Source | Reason/Diagnosis | Behavior |
|---|---|---|
| 0 - DICOM UL service-user (initiated abort) | 0 - reason-not-specified | |
| 2 - DICOM UL service-provider (initiated abort) | 0 - reason-not-specified | |
| | 1 - unrecognized-PDU | |
| | 2 - unexpected-PDU | |
| | 4 - unrecognized-PDU-parameter | |
| | 5 - unexpected-PDU-parameter | |
| | 6 - invalid-PDU-parameter-value | |

#### 4.2.11.3.1. (Real-World) Activity – Modality Performed Procedure Step as SCU

##### 4.2.11.3.1.1. Description and Sequencing of Activities

MPPS SCU & SCP accepts the Modality Performed Procedure Step messages from remote SCUs and automatically forward them to remote SCPs as a SCU.

#### 4.2.11.3.2. (Real-World) Activity – Verification as SCP

##### 4.2.11.3.2.1. Description and Sequencing of Activities

The MPPS AE receives application level communication using the C-ECHO command.

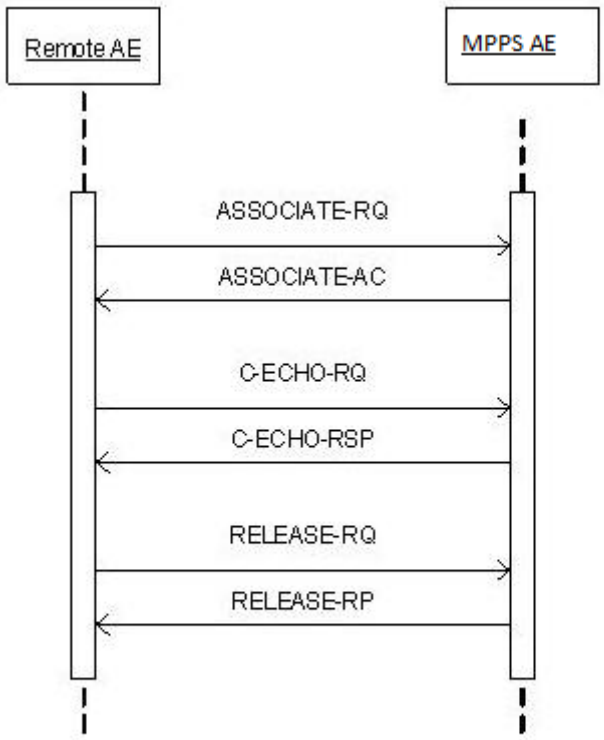


**Figure 31: (Real World) Activity - Verification as SCP**

#### 4.2.11.3.2.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

**Table 224: Proposed Presentation Contexts for (Real-World) Activity – Verification as SCP**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Verification SOP Class | 1.2.840.10008.1.1 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP Role: 1<br>SCU Role: 1 | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

#### 4.2.11.3.2.3. SOP Specific Conformance for Verification SOP Class

The MPPS AE provides standard conformance to Verification SOP Class.

**Table 225: Status Response**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Matching is complete | Association will be released. Message logged in IntelliSpace Cardiovascular Connect |
| Failure | A900 | Identifier does not match SOP Class | Reason will be logged |

**Table 226: DICOM Command Communication Failure Behavior**

| Exception | Description |
|---|---|
| REPLAY TIMEOUT | Reason will be logged |
| ASSOCIATION ABORTED | Reason will be logged |
| ASSOCIATION TIMEOUT | Reason will be logged |

#### 4.2.11.3.3. (Real-World) Activity – Modality Performed Procedure Step as SCP

##### 4.2.11.3.3.1. Description and Sequencing of Activities

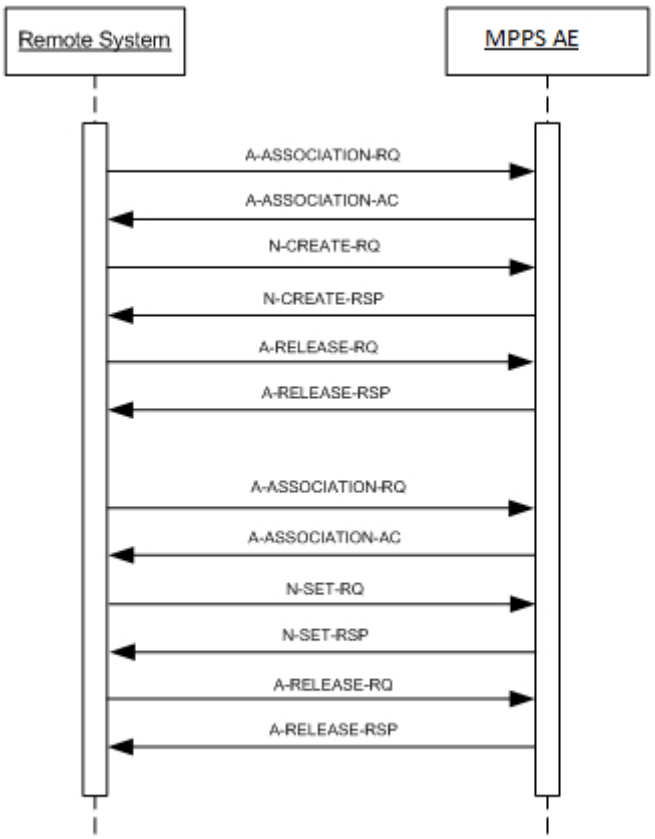


**Figure 32: (Real-World) Activity – MPPS as SCP**

##### 4.2.11.3.3.2. Accepted Presentation Contexts

The presentation contexts are defined in the next table.

**Table 227: Acceptable Presentation Contexts for (Real-World) Activity – Modality Performed Procedure Step as SCP**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Modality Performed Procedure Step SOP Class | 1.2.840.10008.3.1.2.3.3 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

#### 4.2.11.3.3.3. SOP Specific Conformance for Modality Performed Procedure Step SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

##### 4.2.11.3.3.3.1. Dataset Specific Conformance for Modality Performed Procedure Step SOP Class N-CREATE-SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 228: Status Response**

| Service Status | Error Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Success | |
| Failed | 0121 | Missing attribute value | |

##### 4.2.11.3.3.3.2. Dataset Specific Conformance for Modality Performed Procedure Step SOP Class N-SET-SCP

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

**Table 229: Status Response**

| Service Status | rror Code | Further Meaning | Behavior |
|---|---|---|---|
| Success | 0000 | Success | |
| Failed | 0121 | Missing attribute value | |

# 4.3. Network Interfaces

## 4.3.1. Physical Network Interfaces

The System provides only DICOM V3.0 TCP/IP Network Communication Support as defined in PS 3.8 of the standard.
TCP/IP is the only protocol stack supported.
Supported physical medium include:
IEEE 802.3-1995, 10BASE-T
IEEE 802.3-1995, 100BASE-TX (Fast Ethernet)
IEEE 802.3, 1000BASE-X (Fiber Optic Gigabit Ethernet).

The TCP/IP Stack as supported by the underlying Operating System.
The API is the WinSock 2 interface as supported by the underlying Operating System.

## 4.3.2. Additional Protocols

IntelliSpace Cardiovascular operates according to DICOM protocols, in the application layer of standardized communications networks. From this perspective the system supports a number of protocol stacks and physical network media. The system supports DICOM protocols on top of the TCP/IP version 4.

A Point-to-Point Protocol (PPP) Connection over dial-up line in the same network is possible.

# 4.4. Configuration

Any implementation's DICOM conformance may be dependent upon configuration, which takes place at the time of installation. Issues concerning configuration are addressed in this section.

## 4.4.1. AE Title/Presentation Address Mapping

An important installation issue is the translation from AE title to presentation address. How this is to be performed is described here.

In IntelliSpace Cardiovascular the local Network and Media AE titles as well as the IP Address and the TCP listen port associated with these AE are configurable. The different AE's in IntelliSpace Cardiovascular can be configured to use the same AE title.

IntelliSpace Cardiovascular only accepts associations of AE Titles that are configured in IntelliSpace Cardiovascular.

Due to variety of network configurations that exist worldwide, no performance guaranties can be given with respect to the time it takes to complete the execution of a job.

### 4.4.1.1. Local AE Titles

The local AE title mapping and configuration are specified as:

**Table 230: AE Title configuration table**

| Application Entity | Default AE Title | Default TCP/IP Port |
|---|---|---|
| Image Import AE | INTURISPRO_SCP | 104 |
| Send AE | SEND_SCU | NA |
| Auto Export AE | INTURISPRO_SCU | 104 |
| Storage Commitment AE | STCO_SCP | 4000 |
| Query/Retrieve as SCU AE | QR_SCU | NA |
| Query/Retrieve as SCP AE | QR_SCP | 7000 |
| Print AE | VIEWER_PRINT_SCU | 104 |
| Archive AE | Configurable | Configurable |

| Application Entity | Default AE Title | Default TCP/IP Port |
|---|---|---|
| MWL AE | SCP1 | 5111 |
| MPPS AE | SCP1 | 5111 |

#### 4.4.1.2. Remote AE Title/Presentation Address Mapping

The configuration of the remote application is specified here.

**Table 231: Remote AE Title Configuration Table**

| AE Configuration | Description |
|---|---|
| Image Import AE | Import AE Title |
| | Hostname |
| | IP-address |
| | Listen Port |
| | Allowed AE Title |
| | Processing delay |
| | Archive data (yes/no) |
| | TTL (Time To Live) When not archiving. Import TTL is no also (yes/No) |
| Auto Export AE | SCP AE Title |
| | SCU AE Title |
| | Server IP Address |
| | Port number |
| | station name |
| | Instance name |
| | Department name. |
| | Server Name |
| | Server description (not needed/configurable for DICOM) |
| | Server path (not needed/configurable for DICOM) |
| | Username (not needed/configurable for DICOM) |
| | Password (not needed/configurable for DICOM) |
| | Jpeg Quality Factor (not needed/configurable for DICOM) |
| | Export Rule (selection is possible) |
| Send AE | AE Title |
| | Send queue TTL (Days) |
| | Client AE Title |
| | Hostname |
| | IP-address |
| | Port number |
| | Logical name |
| Storage Commitment AE | AE Title |
| | Listen port |
| | Hostname |
| | Allowed AE Title |
| | Port number |
| Query/Retrieve as SCU AE | Q/R SCU AE Title |

| AE Configuration | Description |
|---|---|
| | Q/R SCU Dicom Timeout |
| | Q/R SCU Retrieve Timeout |
| | Store SCU AE Title |
| | Q/R SCP AE Title |
| | Hostname |
| | IP-Address |
| | Port number |
| | Logical name |
| Query/Retrieve as SCP AE | Q/R SCP AE Title |
| | Listen Port |
| | Store SCU AE Title |
| | Instance name. |
| | Department name |
| | Station name |
| | Archive data |
| | TTL, |
| | Allowed Client SCU AE Title |
| | Store SCP AE Title |
| | Hostname |
| | IP-address |
| | Port number |
| Print AE | AE Title |
| | IP-address |
| | Hostname |
| Archive AE | Store SCU AE Title |
| | Archive Hostname |
| | Archive IP-address |
| | Archive Store SCU AE Title |
| | Archive Store SCP AE Title |
| | Archive SCP port number |
| | Archive Q/R SCP Hostname |
| | Archive Q/R SCP IP-Address |
| | Archive Q/R AE Title |
| | Archive Q/R port number |
| | Fetch Move SCU AE Title |
| | Archive Storage Commit SCP hostname |
| | Archive Storage Commit IP-Address |
| | Archive Storage Commit SCP AE Title |
| | Archive Storage Commit port number |
| | Read only (yes/no) |
| | Fetch Time out |
| | Server Path |
| | User Name |
| MWL AE | Type |

| | |
|---|---|
| | AE Title |
| | IP Address |
| | Port |
| | Message Types |
| | Called AE Title Required |
| | Calling AE Title Required |
| | Calling AE Titles |
| | Relay AE Title |
| | Relay IP Address |
| | Relay Port |
| MPPS AE | Type |
| | AE Title |
| | IP Address |
| | Port |
| | Message Types |
| | Called AE Title Required |
| | Calling AE Title Required |
| | Calling AE Titles |
| | Relay AE Title |
| | Relay IP Address |
| | Relay Port |

### 4.4.2. Parameters

The specification of important operational parameters, their default value and range (if configurable) are specified here.

**Table 232: Configuration Parameters Table**

| Parameter | Configurable | Default Value |
|---|---|---|
| General Parameters | | |
| Max PDU Receive Size | No | 28 Kbytes |
| Max PDU Send Size | No | 28 Kbytes |
| Time-out for completion of a TCP/IP connect request (Low-level timeout). | No | 60 seconds |
| Time-out awaiting a Response to a DIMSE Request (Low-level timeout). | No | 60 seconds |
| Time-out for waiting for data between TCP/IP-packets (Low-level timeout). | No | 60 seconds |
| Storage Parameters | | |
| Storage SCU time-out waiting for a response to a C-STORE RQ | No | 60 seconds |
| Time out for reception | No | 2 minutes |
| Maximum number of simultaneously initiated Associations by the Storage AE | No | 10 |
| Supported Transfer Syntaxes (separately configurable for each remote AE | No | |
| Query/Retrieve Parameters (SCU and SCP) | | |
| Maximum PDU size | No | 28 Kbytes |
| Maximum Number of simultaneous Associations (SCU) | No | 1 (C-ECHO), 5 (C-STORE), 5 (C-FIND), 1 (Printer), 1 (Archiving) |
| Q/R SCU DICOM Timeout (SCU) | Yes {300-1500} | 450 seconds |
| Q/R SCU Retrieve Timeout (SCU) | Yes {1..7} | 1 days |

| Parameter | Configurable | Default Value |
|---|---|---|
| Q/R best case query response time (SCP) | No | 2 seconds |
| Q/R worst case query response time (SCP) | No | 10 seconds |
| Storage Commitment Specific Parameters | | |
| Maximum time to wait for cases to be archived | Yes | Maximum 8 hours |
| Maximum number of times for retrying sending a response – with one hours interval | Yes | Maximum 72 times |
| Print Parameters | | |
| Maximum number of simultaneous Associations | No | 1 |
| Maximum numbers of connected printers | No | 5 |

Additional configuration parameters such as hardware options for e.g. a printer are specified as well.

# 5. Media Interchange

## 5.1. Implementation model

The implementation model identifies the DICOM Application Entities for Media in specific implementation and relates the Application Entities to Real-World Activities.

### 5.1.1. Application Data Flow Diagram

As part of the implementation model, an application data flow diagram is included. This diagram represents all of the Application Entities present in an implementation and graphically depicts the relationship of the AE's use of DICOM to Real-World Activities.

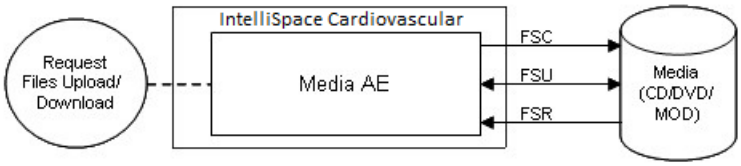


**Figure 33: Application Data Flow Diagram**

**Note:** DICOM FSU for CD and DVD as Media is not supported.

### 5.1.2. Functional Definitions of AE's

The Media AE in an IntelliSpace Cardiovascular supports the following functions for CD-R, DVD and MOD:
- Read the DICOMDIR File from the medium (representing the directory of the DICOM File(s) as recorded on the medium). This information may be displayed as an ordered list of icon images and, if present, with pertinent identifying information (patient name, etc.).
- Read the selected instances from the medium and displays it on the monitor of the View Station. This information is displayed as an ordered list of frames of the selected image or as a dynamic review of the selected image.

And for CD-R, DVD:
- Initialize the medium.
- Write a DICOM File-set onto the medium.
- Create a DICOMDIR File.
- Extend the DICOM File-set and update the DICOMDIR File accordingly. (DICOM Media Storage Service Class).

**Note:** It is not possible to finalize the DVDs from IntelliSpace Cardiovascular. Because of this the studies written on DVD by IntelliSpace Cardiovascular can only be read by IntelliSpace Cardiovascular.

### 5.1.3. Sequencing of Real World Activities

A Real World Activity of the Media AE is: The user selects a set of object to write these to the CD/DVD. Then the CD/DVD will be created with the selected objects. Once the CD/DVD has been created, the user can read this CD/DVD on the IntelliSpace Cardiovascular or for transport to another device for reading.

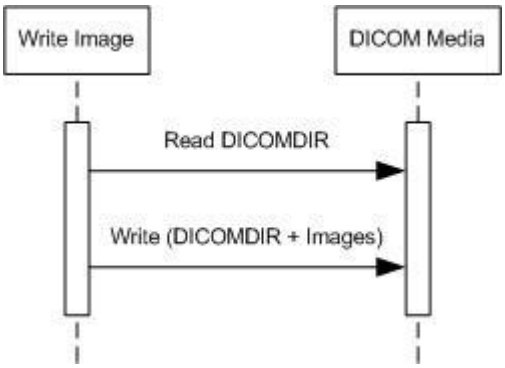


**Figure 34: (Real World) Activity - Media.**

Another Real World Activity of the Media AE is: A CD/DVD from another system IntelliSpace Cardiovascular or previously created CD/DVD can be read by the IntelliSpace Cardiovascular. The IntelliSpace Cardiovascular cannot append (FSU) to this created CD/DVD.
After data is written to CD/DVD, the CD/DVD is finalized automatically by IntelliSpace Cardiovascular; the finalized CD/DVD can now be read on every CD/DVD reader.

A description of supported Application Profiles of that Media is described in the next table.

**Table 233: Conformance Supported Application Profiles**

| Application Profile Identifier | Abstract Syntax Name | Abstract Syntax UID | Transfer Syntax Name | Transfer Syntax UID |
|---|---|---|---|---|
| STD-XABC-CD | X-Ray Angiographic Image Storage | 1.2.840.10008.5.1.4.1.1.12.1 | JPEG Lossless FOP | 1.2.840.10008.1.2.4.70 |
| STD-XA1K-CD | X-Ray Angiographic Image Storage | 1.2.840.10008.5.1.4.1.1.12.1 | JPEG Lossless FOP | 1.2.840.10008.1.2.4.70 |
| | Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7 | ELE | 1.2.840.10008.1.2.1 |
| STD-US-ID-SF-CD | Ultrasound Image Storage | 1.2.840.10008.5.1.4.1.1.6.1 | ELE | 1.2.840.10008.1.2.1 |
| STD-US-ID-SF-MOD* | | | JPEG Lossy Baseline | 1.2.840.10008.1.2.4.50 |
| STD-US-ID-SF-DVD | | | RLE | 1.2.840.10008.1.2.5 |
| STD-US-ID-MF-CD | Ultrasound Multi-frame Image Storage | 1.2.840.10008.5.1.4.1.1.3.1 | ELE | 1.2.840.10008.1.2.1 |
| STD-US-ID-MF-MOD* | | | JPEG Lossy Baseline | 1.2.840.10008.1.2.4.50 |
| STD-US-ID-MF-DVD | | | RLE | 1.2.840.10008.1.2.5 |
| STD-GEN-CD/ DVD | Computed Radiography Image Storage | 1.2.840.10008.5.1.4.1.1.1 | ELE | 1.2.840.10008.1.2.1 |
| | CT Image Storage | 1.2.840.10008.5.1.4.1.1.2 | | |
| | Nuclear Medicine Image Storage | 1.2.840.10008.5.1.4.1.1.20 | | |
| | X-Ray Angiographic Image Storage | 1.2.840.10008.5.1.4.1.1.12.1 | | |
| | X-Ray Radiofluoroscopic Image Storage | 1.2.840.10008.5.1.4.1.1.12.2 | | |
| | Ultrasound Multi-frame Image Storage | 1.2.840.10008.5.1.4.1.1.3.1 | | |
| | MR Image Storage | 1.2.840.10008.5.1.4.1.1.4 | | |
| | Ultrasound Image Storage | 1.2.840.10008.5.1.4.1.1.6.1 | | |
| | Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7 | | |
| ALL | Media Storage Directory Storage | 1.2.840.10008.1.3.10 | ELE | 1.2.840.10008.1.2.1 |

* The supported MOD (FSR) Application Profiles include all Application Profiles where MOD* is MOD12, MOD23, MOD128, MOD230, MOD540, or MOD650.

## 5.2. AE Specifications

This section in the DICOM Conformance Statement specifies a set of Media Application Entities.

### 5.2.1. Media AE Media - Specification

If applicable, this section contains a description of sequencing of Real-World Activities that the AE's require.

Depending on the study size, the viewer can write one or more complete studies to one or more CD's. Furthermore one viewer can review and upload:

- Multi-patient CDs and DVDs;
- Multi-study CDs and DVDs;
- Multi-CD studies.

The supported Application Profiles, their Roles and the Service Class (SC) options, all defined in DICOM terminology, are listed in next table.

**Table 234: AE Media AE related Application Profiles, RWA activities and roles**

| Supported Application Profile | Identifier | Real-World Activities | Roles |
|---|---|---|---|
| 1024 X-Ray Angiographic Studies on CD-R | STD-XA1K-CD | Create File-set | FSC |
| | | Read File-set | FSR |
| Basic Cardiac X-RAY Anglographic Studies on CD-R | STD-XABC-CD | Create File-set | FSC |
| | | Read File-set | FSR |
| CT/MR Studies on CD-R | STD-CTMR-CD | Create File-set | FSC |
| | | Read File-set | FSR |
| General Purpose CD-R Interchange | STD-GEN-CD | Create File-set | FSC |
| | | Read File-set | FSR |
| Image Display (Ultrasound {SF\|MF}) | STD-US-ID-SF-CDR/STD-US-ID-MF-CDR | Create File-set | FSC |
| | | Read File-set | FSR |
| CT/MR Studies on DVD Media | STD-CTMR-DVD | Create File-set | FSC |
| | | Read File-set | FSR |
| General Purpose DVD Interchange with JPEG | STD-GEN-DVD-JPEG | Create File-set | FSC |
| | | Read File-set | FSR |
| Image Display (Ultrasound {SF\|MF}) | STD-US-ID-SF-DVD/STD-US-ID-MF-DVD | Create File-set | FSC |
| | | Read File-set | FSR |
| CT/MR Studies on 1.2GB MOD | STD-CTMR-MOD12 | Read File-set | FSR |
| CT/MR Studies on 2.3GB MOD | STD-CTMR-MOD23 | Read File-set | FSR |
| CT/MR Studies on 4.1GB MOD | STD-CTMR-MOD41 | Read File-set | FSR |
| CT/MR Studies on 650MB MOD | STD-CTMR-MOD650 | Read File-set | FSR |
| Image Display (Ultrasound {SF\|MF}) on 1.2GB 130mm MOD | STD-US-ID-SF-MOD12/STD-US-ID-MF-MOD12 | Read File-set | FSR |
| Image Display (Ultrasound {SF\|MF}) on 128MB MOD | STD-US-ID-SF-MOD128/STD-US-ID-MF-MOD128 | Read File-set | FSR |
| Image Display (Ultrasound {SF\|MF}) on 2.3GB 130mm MOD | STD-US-ID-SF-MOD23/STD-US-ID-MF-MOD23 | Read File-set | FSR |
| Image Display (Ultrasound {SF\|MF}) on 230MB 90mm MOD | STD-US-ID-SF-MOD230/STD-US-ID-MF-MOD230 | Read File-set | FSR |
| Image Display (Ultrasound {SF\|MF}) on 540MB 90mm MOD | STD-US-ID-SF-MOD540/STD-US-ID-MF-MOD540 | Read File-set | FSR |
| Image Display (Ultrasound {SF\|MF}) on 650MB 130mmMOD | STD-US-ID-SF-MOD650/STD-US-ID-MF-MOD650 | Read File-set | FSR |

#### 5.2.1.1. File Meta Information for the Media AE

The Application Entity title is registered in the DICOM File Meta Information header and is supported by the CD/DVD-writer (CD write option) acting only as FSC.

**Table 235: File Meta Information for the Media AE**

| | |
|---|---|
| Implementation Class UID | 1.3.46.670589.16.14.4.1.1 |
| Implementation Version Name | ISCV R1.1.L1 |

#### 5.2.1.2. Real-World Activities

The AE specification contains a description of the Real-World Activities, which invoke the particular AE.

##### 5.2.1.2.1. RWA - Read File-set

This Media Application Entity has a File-set Reader functionality which is described here.

For the Real World Activity Read File-set (DICOM Reading), the Media AE will act as an FSR using the Interchange option when reading the directory of the medium and when reading the requested images.

###### 5.2.1.2.1.1. Media Storage Application Profile

The table below gives an overview of the supported Application Profiles.

**Table 236: Supported Application Profiles**

| Application Profile | Identifier | Real World Activity | Role | SC Option |
|---|---|---|---|---|
| CT/MR Studies on {650MB\|1.2GB\|2.3GB\|4.1GB} MOD | STD-CTMR-MOD* | Read image(s) from MOD | FSR | Interchange |
| CT/MR Studies on CD-R | STD-CTMR-CD | Read image(s) from CD | FSR | Interchange |
| CT/MR Studies on DVD Media | STD-CTMR-DVD | Read image(s) from DVD | FSR | Interchange |
| General Purpose CD-R Interchange | STD_GEN-CD | Read image(s) from CD | FSR | Interchange |
| General Purpose Interchange on DVD Media | STD-GEN-DVD | Read image(s) from DVD | FSR | Interchange |
| Basic cardiac X-Ray Angiographic Studies on CD-R media | STD-XABC-CD | Read image(s) from CD | FSR | Interchange |
| 1024 X-Ray Angiographic Studies on CD-R Media | STD-XA1K-CD | Read image(s) from CD | FSR | Interchange |
| Image Display (Ultrasound {SF\|MF}) | STD-US-ID-MF-CDR | Read image(s) from CD | FSR | Interchange |
| | STD-US-ID-SF-CDR | Read image(s) from CD | FSR | Interchange |
| | STD-US-ID-MF-MOD* | Read image(s) from MOD | FSR | Interchange |
| | STD-US-ID-SF-MOD* | Read image(s) from MOD | FSR | Interchange |
| | STD-US-ID-SF-DVD | Read image(s) from DVD | FSR | Interchange |
| | STD-US-ID-MF-DVD | Read image(s) from DVD | FSR | Interchange |

* The supported MOD (FSR) Application Profiles include all Application Profiles where MOD* is MOD12, MOD23, MOD128, MOD230, MOD540, or MOD650.

###### 5.2.1.2.1.1.1. Options

Not applicable.

##### 5.2.1.2.2. RWA - Create File-set

This Media Application Entity has a File-set Creator functionality which is described here.

For the Real World Activities DICOM Recording the Media AE will write the SOP instances as provided by the RWA to the record able DICOM medium and a corresponding DICOMDIR is created.

#### 5.2.1.2.2.1. Media Storage Application Profile

See table below for an overview of the support of the Application Profiles.

**Table 237: Supported Application Profiles**

| Application Profile | Identifier | Real World Activity | Role | SC Option |
|---|---|---|---|---|
| CT/MR Studies on CD-R | STD-CTMR-CD | Write image(s) to CD-R | FSC | Interchange |
| CT/MR Studies on DVD Media | STD-CTMR-DVD | Write image(s) to CD-R | FSC | Interchange |
| General Purpose CD-R Interchange | STD_GEN-CD | Write image(s) to CD-R | FSC | Interchange |
| General Purpose Interchange on DVD Media | STD-GEN-DVD | Write image(s) to DVD-RAM | FSC | Interchange |
| Basic cardiac X-Ray Angiographic Studies on CD-R media | STD-XABC-CD | Write image(s) to CD-R | FSC | Interchange |
| 1024 X-Ray Angiographic Studies on CD-R Media | STD-XA1K-CD | Write image(s) to CD-R | FSC | Interchange |
| Image Display (Ultrasound {SF\|MF}) | STD-US-ID-MF-CDR | Write image(s) to CD-R | FSC | Interchange |
| | STD-US-ID-SF-CDR | Write image(s) to CD-R | FSC | Interchange |
| | STD-US-ID-SF-DVD | Write image(s) to DVD | FSC | Interchange |
| | STD-US-ID-MF-DVD | Write image(s) to DVD | FSC | Interchange |

The following table presents an overview of the defined Photometric Interpretation and Transfer Syntax pairs for the Ultrasound Application Profiles (STD-US-xx-SF/MF…).

**Table 238: Defined Photometric Interpretation and Transfer Syntax Pairs**

| Photometric Interpretation Value | Transfer Syntax Name | Transfer Syntax UID |
|---|---|---|
| MONOCHROME2 | ELE | 1.2.840.10008.1.2.1 |
| | RLE | 1.2.840.10008.1.2.5 |
| RGB | ELE | 1.2.840.10008.1.2.1 |
| | RLE | 1.2.840.10008.1.2.5 |
| PALETTE COLOR | ELE | 1.2.840.10008.1.2.1 |
| | RLE | 1.2.840.10008.1.2.5 |
| YBR_FULL | RLE | 1.2.840.10008.1.2.5 |
| YBR_FULL_422 | ELE | 1.2.840.10008.1.2.1 |
| | JPEG Lossy Baseline | 1.2.840.10008.1.2.4.50 |
| YBR_PARTIAL_422 | ELE | 1.2.840.10008.1.2.1 |
| | JPEG Lossy Baseline | 1.2.840.10008.1.2.4.50 |

##### 5.2.1.2.2.1.1. Options

In the DICOMDIR file a Basic Directory IOD is present, containing PATIENT, STUDY, SERIES and IMAGE directory record types.

The following table describes the optional directory keys of the Media AE.

**Table 239: Optional Keys**

| Attribute name | Tag | VR | Notes |
|---|---|---|---|
| Patient Keys | | | |
| Patient's Birth Date | 0010,0030 | DA | Explicit additional DICOMDIR key for Application Profiles STD-XABC-CD and STD-XA1K-CD (VT=2). |

| Attribute name | Tag | VR | Notes |
|---|---|---|---|
| Patient's Sex | 0010,0040 | CS | Explicit additional DICOMDIR key for Application Profiles STD-XABC-CD and STD-XA1K-CD (VT=2). |
| Study Keys | | | |
| Referring Physician's Name | 0008,0090 | PN | - |
| Named of Physician Reading Study | 0008,1060 | PN | - |
| Series Keys | | | |
| Series Date | 0008,0021 | DA | - |
| Series Time | 0008,0031 | TM | - |
| Institution Name | 0008,0080 | LO | Implicit additional DICOMDIR key for STD-US, and STD-GEN, Application Profiles. Explicit additional DICOMDIR key for Application Profiles STD-XABC-CD and STD-XA1K-CD (VT=2). |
| Institution Address | 0008,0081 | ST | Implicit additional DICOMDIR key for STD-US, and STD-GEN, Application Profiles. Explicit additional DICOMDIR key for Application Profiles STD-XABC-CD and STD-XA1K-CD (VT=2). |
| Series Description | 0008,103E | LO | - |
| Performing Physician's Name | 0008,1050 | PN | Explicit additional DICOMDIR key for Application Profiles STD-XABC-CD and STD-XA1K-CD (VT=2). |
| Body Part Examined | 0018,0015 | CS | - |
| Protocol Name | 0018,1030 | LO | - |
| Image Keys | | | |
| Image Type | 0008,0008 | CS | Explicit additional DICOMDIR key for Application Profiles STD-XABC-CD, STD-XA1K-CD and STD-GEN-CD (VT=1). |
| Content Date | 0008,0023 | DA | - |
| Content Time | 0008,0033 | TM | - |

During the copy of "PLACED" data of a DSR study on IntelliSpace Cardiovascular to CD/DVD Media, following options are available as the export parameter that will apply to all DSR studies:
- Export As: “DICOM” (default) and
- Compression: “Loop” and
- Compression: “Still”.

Both compression values are always “RLE”.

## 5.3. Augmented and Private Application Profiles

Not applicable

## 5.4. Media Configuration

Not applicable.

# 6. Support of Character Sets

Any support for character sets in Network and Media services is described here.

**Table 240: Supported DICOM Character Sets**

| Character Set Description | Defined Term | ESC Sequence | ISO Registration Number | Code Element | Character Set |
|---|---|---|---|---|---|
| Latin alphabet No. 1 | ISO 2022 IR 100 | ESC 02/08 04/02 | ISO-IR 6 | G0 | ISO 646 |
| | | ESC 02/13 04/01 | ISO-IR 100 | G1 | Supplementary set of ISO 8859 |
| Japanese | ISO 2022 IR 13 | ESC 02/08 04/10 | ISO-IR 14 | G0 | JIS X 0201: Romaji |
| | | ESC 02/09 04/09 | ISO-IR 13 | G1 | JIS X 0201: Katakana |
| Japanese | ISO 2022 IR 159 | - | ISO-IR 159 | G0 | JIS X 0212: Supplementary Kanji set |
| | | - | - | - | - |
| Japanese | ISO 2022 IR 87 | - | ISO-IR 87 | G0 | JIS X 0208: Kanji |
| | | - | - | - | - |
| Latin alphabet No. 1 | ISO_IR 100 | - | ISO-IR 6 | G0 | ISO 646 |
| | | - | ISO-IR 100 | G1 | Supplementary set of ISO 8859 |

**Notes:**
If the internally stored character group has been updated using any Kanji character, this PN attribute will always be exported as "Ideographic" component group.

A DICOM Value Representation of type PN, containing Japanese characters can exists of three component groups in the format:
<Single byte character>=<Ideographic character>=<Phonetic character>
Each component group is separated by the equal delimiter "=".

The behavior of the IntelliSpace Cardiovascular during DICOM data import as SCP
When IntelliSpace Cardiovascular imports DICOM data with PN type attributes with the above three component groups, then IntelliSpace Cardiovascular uses the <Single byte character> component group for storage into the internal database.

In the case the <Single byte character> component group is absent; IntelliSpace Cardiovascular uses the <Ideographic character> component group for storage into the internal database.
In the case both the <Single byte character> and the <Ideographic character> component groups are absent, IntelliSpace Cardiovascular uses the <phonetic character> component group for storage into the internal database.

The behavior of IntelliSpace Cardiovascular during DICOM data export as SCU
When IntelliSpace Cardiovascular exports DICOM data, it uses the internally stored character group while exporting the PN type attributes.

That means that if the <Single byte character> component group is internally saved, IntelliSpace Cardiovascular only uses this component group during export and the other two component groups are not exported.

And if the <Ideographic character> group is internally saved, then that group is used for export and the other two component groups are not exported.
And if the <Phonetic character> group is internally saved, then that group is used for export and the other two component groups are not exported.

# 7. Security

## 7.1. Security Profiles

All kind of Security Profiles are described below.

### 7.1.1. Security use Profiles

Not applicable

### 7.1.2. Security Transport Connection Profiles

Not applicable

### 7.1.3. Digital Signature Profiles

Not applicable

### 7.1.4. Media Storage Security Profiles

Not applicable

### 7.1.5. Attribute Confidentiality Profiles

No instances of the encrypted attributes data set are created. No transfer syntaxes are supported for encoding/decoding of encrypted attributes data sets.

The table below lists the attributes for anonymization (De-Identification) within a patient record. The terms used to describe the replacement value are listed below:

Empty: The attribute value is left empty (zero length).
User editable: The user can enter or edit the value for an attribute manually.
User selectable: The user can select a predefined list of values for an attribute.
System: The attribute value will be changed automatically by the system. Not configurable.
As is: The attribute value will not be changed. The text field for the attribute is grayed out.
Fixed value: The attribute value is set according a predefined list of values set by the system administrator.
Free: The attribute value gets the user-entered value. The system administrator can set a default value or, for gender, can select a value from the list.

**Table 241: Basic Application Level Confidentiality Profile Attributes**

| Attribute Name | Tag | VR | Replacement Value | Remarks |
|---|---|---|---|---|
| Implementation Class UID | 0002,0012 | UI | new UID | System automatically changes |
| Implementation Version Name | 0002,0013 | SH | new Name | System automatically changes |
| Source Application Entity Title | 0002,0016 | AE | new AE title | System automatically changes |
| Patient’s Name | 0010,0010 | PN | Empty, Fixed value, As is, Free | Free editable |
| Patient ID (MRN) | 0008,1020 | LO | Empty, Fixed value, As is, Free | Free editable |
| Patient’s Birth Date | 0010,0030 | DA | Empty, Fixed value, As is, Free | Free editable |
| Patient’s Sex | 0010,0040 | CS | Empty, Fixed value (Female, Male, Other, Empty), As is, Free | Free editable |
| Issuer of Patient ID's | 0010,0021 | LO | Institution name | Copied from institution name |
| Patient's Address | 0010,1040 | LO | No values | System automatically changes |

| Attribute Name | Tag | VR | Replacement Value | Remarks |
|---|---|---|---|---|
| Country of Residence | 0010,2150 | LO | No values | System automatically changes |
| region of Residence | 0010,2152 | LO | No values | System automatically changes |
| Station Name | 0008,1010 | SH | Empty | Value of zero length, "" |
| Instance Creator UID | 0008,0014 | UI | new UID | System automatically changes |
| SOP Instance UID | 0008,0018 | UI | new UID | System automatically changes |
| Accession Number | 0008,0050 | SH | Empty, Fixed value, As is, Free | Free editable |
| Institution Name | 0008,0080 | LO | Empty, Fixed value, As is, Free. Possible values: “Default Institution”, “DICOM”. | Free editable |
| Referring Physician’s Name | 0008,0090 | PN | Empty, Fixed value, As is, Free | Free editable |
| Performing Physician’s Name | 0008,1050 | PN | Empty, Fixed value, As is, Free | Free editable |
| Operators Name | 0008,1070 | PN | Empty | Value of zero length, "" |
| Referenced SOP Instance UID | 0008,1155 | UI | new UID | System automatically changes |
| Study ID | 0020,0010 | SH | Empty, Fixed value, As is, Free | Free editable |
| Frame of Reference UID | 0020,0052 | UI | new UID | System automatically changes |
| Study Instance UID | 0020,000D | UI | new UID | System automatically changes |
| Series Instance UID | 0020,000E | UI | new UID | System automatically changes |

### 7.1.6. Network Address Management Profiles

Not applicable

### 7.1.7. Time Synchronization Profiles

Not applicable

### 7.1.8. Application Configuration Management Profiles

Not applicable

### 7.1.9. Audit Trail Profiles

Not applicable

## 7.2. Association Level Security

Not applicable.

## 7.3. Application Level Security

Not applicable.

Not applicable.

# 8. Annexes of application "Cath Analysis Package (CAAS2000)"

## 8.1. IOD Contents

### 8.1.1. Created SOP Instance

This section specifies each IOD created by this application.

**Notes:**

SOP classes created by CAAS2000 for IntelliSpace Cardiovascular are encoded with transfer syntax DICOM Implicit VR Little Endian (1.2.840.10008.1.2). No private tags are included in the derived objects so no loss of information.

Structured Reporting is supported by this version of CAAS2000 but this functionality is disabled for IntelliSpace Cardiovascular.

This section specifies each IOD created (including private IOD's). It should specify the attribute name, tag, VR, and value. The value should specify the range and source (e.g. user input, Modality Worklist, automatically generated, etc.). For content items in templates, the range and source of the concept name and concept values should be specified. Whether the value is always present or not shall be specified.

Abbreviations used in the IOD tables for the column "Presence of Module" are:

| | |
|---|---|
| ALWAYS | The module is always present |
| CONDITIONAL | The module is used under specified condition |

Abbreviations used in the Module table for the column "Presence of Value" are:

| | |
|---|---|
| ALWAYS | The attribute is always present with a value |
| EMPTY | The attribute is always present without any value (attribute sent zero length) |
| VNAP | The attribute is always present and its Value is Not Always Present (attribute sent zero length if no value is present) |
| ANAP | The attribute is present under specified condition – if present then it will always have a value |

The abbreviations used in the Module table for the column "Source" are:

| | |
|---|---|
| AUTO | The attribute value is generated automatically |
| CONFIG | The attribute value source is a configurable parameter |
| COPY | The attribute value source is another SOP instance |
| FIXED | The attribute value is hard-coded in the application |
| IMPLICIT | The attribute value source is a user-implicit setting |
| MPPS | The attribute value is the same as that use for Modality Performed Procedure Step |
| MWL | The attribute value source is a Modality Worklist |
| USER | The attribute value source is explicit user input |

#### 8.1.1.1. List of created SOP Classes

**Table 242: List of created SOP Classes**

| SOP Class Name | SOP Class UID |
|---|---|
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 |

#### 8.1.1.2. Secondary Capture Image Storage SOP Class

**Table 243: IOD of Created Secondary Capture Image Storage SOP Class Instances**

| Information Entity | Module | Presence Of Module |
|---|---|---|
| Patient | Patient Module | ALWAYS |
| Study | General Study Module | ALWAYS |

| | | |
|---|---|---|
| Study | Patient Study Module | CONDITIONAL |
| Series | General Series Module | ALWAYS |
| Equipment | General Equipment Module | CONDITIONAL |
| Equipment | SC Equipment Module | ALWAYS |
| Image | General Image Module | ALWAYS |
| Image | Image Pixel Module | ALWAYS |
| Image | VOI LUT Module | CONDITIONAL |
| Image | SOP Common Module | ALWAYS |

**Table 244: Patient Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Patient's Name | 0010,0010 | PN | | VNAP | COPY | - |
| Patient ID | 0010,0020 | LO | | VNAP | COPY | - |
| Issuer of Patient ID | 0010,0021 | LO | | ALWAYS | AUTO | If Issuer of Patient ID is not present in the imported object, then “Default Institution” will be put by IntelliSpace Cardiovascular. |
| Patient's Birth Date | 0010,0030 | DA | | VNAP | COPY | - |
| Patient's Sex | 0010,0040 | CS | F, M, O | VNAP | COPY | - |

**Table 245: General Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Study Date | 0008,0020 | DA | | ALWAYS | AUTO | - |
| Study Time | 0008,0030 | TM | | ALWAYS | AUTO | - |
| Accession Number | 0008,0050 | SH | | EMPTY | AUTO | EMPTY |
| Referring Physician's Name | 0008,0090 | PN | | VNAP | COPY | The report output from CAAS2000 for IntelliSpace Cardiovascular contains "Reported Physician" information which is taken from the value of this attribute. |
| Study Instance UID | 0020,000D | UI | | ALWAYS | COPY | - |
| Study ID | 0020,0010 | SH | | ALWAYS | COPY | - |

**Table 246: Patient Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Admitting Diagnoses Description | 0008,1080 | LO | | ANAP | COPY | - |

**Table 247: General Series Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Modality | 0008,0060 | CS | | ALWAYS | COPY | - |
| Performing Physician's Name | 0008,1050 | PN | | VNAP | COPY | - |
| Protocol Name | 0018,1030 | LO | | ANAP | COPY | |
| Series Instance UID | 0020,000E | UI | | ALWAYS | AUTO | - |
| Series Number | 0020,0011 | IS | | VNAP | COPY | - |

**Table 248: General Equipment Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Manufacturer | 0008,0070 | LO | Philips Medical Systems | VNAP | AUTO | - |

**Table 249: SC Equipment Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Modality | 0008,0060 | CS | OT | ANAP | AUTO | - |
| Conversion Type | 0008,0064 | CS | WSD | ALWAYS | AUTO | - |

**Table 250: General Image Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Image Type | 0008,0008 | CS | Value 1: DERIVED, Value 2: SECONDARY | ANAP | AUTO | - |
| Instance Number | 0020,0013 | IS | | VNAP | AUTO | - |
| Patient Orientation | 0020,0020 | CS | | EMPTY | AUTO | EMPTY |

**Table 251: Image Pixel Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Samples per Pixel | 0028,0002 | US | 1 | ALWAYS | AUTO | - |
| Photometric Interpretation | 0028,0004 | CS | MONOCHROME2 | ALWAYS | AUTO | - |
| Rows | 0028,0010 | US | | ALWAYS | AUTO | - |
| Columns | 0028,0011 | US | | ALWAYS | AUTO | - |
| Pixel Aspect Ratio | 0028,0034 | IS | | ALWAYS | AUTO | - |
| Bits Allocated | 0028,0100 | US | 8 | ALWAYS | AUTO | - |
| Bits Stored | 0028,0101 | US | 8 | ALWAYS | AUTO | - |
| High Bit | 0028,0102 | US | 7 | ALWAYS | AUTO | - |
| Pixel Representation | 0028,0103 | US | 0 | ALWAYS | AUTO | - |
| Pixel Data | 7FE0,0010 | O W/ OB | | ALWAYS | AUTO | - |

**Table 252: VOI LUT Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Window Center | 0028,1050 | DS | | ALWAYS | COPY | - |
| Window Width | 0028,1051 | DS | | ALWAYS | COPY | - |

**Table 253: SOP Common Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Specific Character Set | 0008,0005 | CS | ISO_IR 100 | ANAP | COPY | Required if expanded/replacement character set used |
| SOP Class UID | 0008,0016 | UI | 1.2.840.10008.5.1.4.1.1.7 | ALWAYS | AUTO | - |
| SOP Instance UID | 0008,0018 | UI | | ALWAYS | AUTO | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| Instance Number | 0020,0013 | IS | | ANAP | AUTO | |

### 8.1.2. Usage of Attributes from Received IOD

The following table lists the functionality supported by this application.

**Table 254: Functionalities**

| Functionality | Type1 | Optional | Private |
|---|---|---|---|
| CAAS 2000 | X | | |

#### 8.1.2.1. Usage of the Functionality CAAS 2000

The following table lists the supported SOP Classes which can be used by this application.

**Table 255: Supported SOP Classes for functionality CAAS 2000**

| SOP Class name | SOP Class UID |
|---|---|
| X-Ray Angiographic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.1 |
| X-Ray Radiofluoroscopic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.2 |

**Notes:**

The SOP classes mentioned above are supported by CAAS2000 for IntelliSpace Cardiovascular R3.2L1 with transfer syntaxes DICOM Implicit VR Little Endian (1.2.840.10008.1.2), DICOM Explicit VR Little Endian (1.2.840.10008.1.2.1) and DICOM Explicit JPEG Lossless Image Compression (1.2.840.10008.1.2.4.70).

Pixel Intensity Relationship (0028,1040) = "DRM" or "SQRT" (e.g. GE Innova) are supported by CAAS2000 for IntelliSpace Cardiovascular additionally to the values "LIN", "LOG" and "DISP".

Matrix size Rows (0028,0010) and Columns (0028,0011) with a minimum of 8 pixels and a maximum of 2048 pixels are supported by CAAS2000 for IntelliSpace Cardiovascular.

### 8.1.3. Attribute Mapping

Not applicable.

### 8.1.4. Coerced/Modified fields

Not applicable.

## 8.2. Data Dictionary of Private Attributes

Not applicable.

## 8.3. Coded Terminology and Templates

Not applicable.

### 8.3.1. Context Groups

Not applicable.

### 8.3.2. Template Specifications

Not applicable.

### 8.3.3. Private code definitions

Not applicable.

## 8.4. Grayscale Image consistency

Not applicable.

## 8.5. Standard Extended/Specialized/Private SOPs

Not applicable.

## 8.6. Private Transfer Syntaxes

Not applicable.

# 9. Annexes of application "Cath Viewer"

## 9.1. IOD Contents

### 9.1.1. Created SOP Instance

This section specifies each IOD created by this application.

This section specifies each IOD created (including private IOD's). It should specify the attribute name, tag, VR, and value. The value should specify the range and source (e.g. user input, Modality Worklist, automatically generated, etc.). For content items in templates, the range and source of the concept name and concept values should be specified. Whether the value is always present or not shall be specified.

Abbreviations used in the IOD tables for the column "Presence of Module" are:

| | |
|---|---|
| ALWAYS | The module is always present |
| CONDITIONAL | The module is used under specified condition |

Abbreviations used in the Module table for the column "Presence of Value" are:

| | |
|---|---|
| ALWAYS | The attribute is always present with a value |
| EMPTY | The attribute is always present without any value (attribute sent zero length) |
| VNAP | The attribute is always present and its Value is Not Always Present (attribute sent zero length if no value is present) |
| ANAP | The attribute is present under specified condition – if present then it will always have a value |

The abbreviations used in the Module table for the column "Source" are:

| | |
|---|---|
| AUTO | The attribute value is generated automatically |
| CONFIG | The attribute value source is a configurable parameter |
| COPY | The attribute value source is another SOP instance |
| FIXED | The attribute value is hard-coded in the application |
| IMPLICIT | The attribute value source is a user-implicit setting |
| MPPS | The attribute value is the same as that use for Modality Performed Procedure Step |
| MWL | The attribute value source is a Modality Worklist |
| USER | The attribute value source is explicit user input |

#### 9.1.1.1. List of created SOP Classes

**Table 256: List of created SOP Classes**

| SOP Class Name | SOP Class UID |
|---|---|
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 |

#### 9.1.1.2. Secondary Capture Image Storage SOP Class

**Table 257: IOD of Created Secondary Capture Image Storage SOP Class Instances**

| Information Entity | Module | Presence Of Module |
|---|---|---|
| Patient | Patient Module | ALWAYS |
| Study | General Study Module | ALWAYS |
| Study | Patient Study Module | CONDITIONAL |
| Series | General Series Module | ALWAYS |
| Equipment | General Equipment Module | ALWAYS |
| Equipment | SC Equipment Module | ALWAYS |
| Image | General Image Module | ALWAYS |
| Image | Image Pixel Module | ALWAYS |

| | | |
|---|---|---|
| Image | SOP Common Module | ALWAYS |
| | Extended Dicom and Private attributes | ALWAYS |

**Table 258: Patient Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Patient's Name | 0010,0010 | PN | | VNAP | COPY | - |
| Patient ID | 0010,0020 | LO | | VNAP | COPY | - |
| Patient's Birth Date | 0010,0030 | DA | | VNAP | COPY | - |
| Patient's Birth Time | 0010,0032 | TM | | ANAP | COPY | - |
| Patient's Sex | 0010,0040 | CS | F, M, O | VNAP | COPY | - |
| Issuer of Patient ID | 0010,0021 | LO | | ANAP | COPY | If Issuer of Patient ID is not present in the imported object, then "Default Institution" will be put by IntelliSpace Cardiovascular. |

**Table 259: General Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Study Date | 0008,0020 | DA | | ALWAYS | COPY | - |
| Study Time | 0008,0030 | TM | | ALWAYS | COPY | - |
| Accession Number | 0008,0050 | SH | | ALWAYS | COPY | - |
| Referring Physician's Name | 0008,0090 | PN | | ANAP | COPY | - |
| Study Description | 0008,1030 | LO | | ANAP | COPY | - |
| Name of Physician(s) Reading Study | 0008,1060 | PN | | ANAP | COPY | - |
| Study Instance UID | 0020,000D | UI | | ALWAYS | COPY | - |
| Study ID | 0020,0010 | SH | | VNAP | COPY | - |

**Table 260: Patient Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Admitting Diagnoses Description | 0008,1080 | LO | | ANAP | COPY | - |
| Patient's Weight | 0010,1030 | DS | | ANAP | COPY | - |

**Table 261: General Series Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Series Date | 0008,0021 | DA | | ANAP | COPY | - |
| Series Time | 0008,0031 | TM | | ANAP | COPY | - |
| Modality | 0008,0060 | CS | | ANAP | COPY | - |
| Series Description | 0008,103E | LO | | ANAP | COPY | - |
| Referenced Performed Procedure Step Sequence | 0008,1111 | SQ | | ANAP | COPY | - |
| >Referenced SOP Class UID | 0008,1150 | UI | | ALWAYS | AUTO | - |
| >Referenced SOP Instance UID | 0008,1155 | UI | | ALWAYS | AUTO | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| Instance Creation Date | 0008,0012 | DA | | ANAP | AUTO | - |
| Instance Creation Time | 0008,0013 | TM | | ANAP | AUTO | - |
| Instance Creator UID | 0008,0014 | UI | | ANAP | AUTO | - |
| Body Part Examined | 0018,0015 | CS | | ANAP | COPY | - |
| Protocol Name | 0018,1030 | LO | | ANAP | COPY | - |
| Series Instance UID | 0020,000E | UI | | ALWAYS | AUTO | - |
| Series Number | 0020,0011 | IS | | VNAP | COPY | - |
| Performed Procedure Step Start Date | 0040,0244 | DA | | ANAP | COPY | - |
| Performed Procedure Step Start Time | 0040,0245 | TM | | ANAP | COPY | - |
| Performed Procedure Step ID | 0040,0253 | SH | | ANAP | COPY | - |
| Performed Procedure Step Description | 0040,0254 | LO | | ANAP | COPY | - |
| Request Attributes Sequence | 0040,0275 | SQ | | ANAP | COPY | - |
| Comments on the Performed Procedure Step | 0040,0280 | ST | | ANAP | COPY | - |

**Table 262: General Equipment Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Manufacturer | 0008,0070 | LO | Philips Medical Systems | ALWAYS | AUTO | - |
| Institution Name | 0008,0080 | LO | Hospital | ANAP | AUTO | - |
| Manufacturer's Model Name | 0008,1090 | LO | “ViewForum” | ANAP | AUTO | - |
| Software Versions | 0018,1020 | LO | "ViewForum 6.1\PMS5.2 MIMIT EVIIMDictionary" | ANAP | AUTO | - |

**Table 263: SC Equipment Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Modality | 0008,0060 | CS | | ANAP | COPY | - |
| Conversion Type | 0008,0064 | CS | WSD | ALWAYS | AUTO | - |

**Table 264: General Image Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Image Type | 0008,0008 | CS | Value 1: DERIVED, Value 2: SECONDARY | ALWAYS | AUTO | - |
| Content Date | 0008,0023 | DA | | VNAP | AUTO | - |
| Content Time | 0008,0033 | TM | | VNAP | AUTO | - |
| Instance Number | 0020,0013 | IS | | VNAP | AUTO | - |
| Patient Orientation | 0020,0020 | CS | | VNAP | COPY | - |

**Table 265: Image Pixel Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Samples per Pixel | 0028,0002 | US | 0x0001=1, 1 | ALWAYS | AUTO | - |
| Photometric Interpretation | 0028,0004 | CS | MONOCHROME2 | ALWAYS | AUTO | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| Planar Configuration | 0028,0006 | US | | ALWAYS | AUTO | - |
| Rows | 0028,0010 | US | | ALWAYS | AUTO | - |
| Columns | 0028,0011 | US | | ALWAYS | AUTO | - |
| Bits Allocated | 0028,0100 | US | 8 | ALWAYS | AUTO | - |
| Bits Stored | 0028,0101 | US | 8 | ALWAYS | AUTO | - |
| High Bit | 0028,0102 | US | 7 | ALWAYS | AUTO | - |
| Pixel Representation | 0028,0103 | US | 0 | ALWAYS | AUTO | - |
| Pixel Data | 7FE0,0010 | O W/ OB | | ALWAYS | AUTO | - |

**Table 266: SOP Common Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Specific Character Set | 0008,0005 | CS | | ANAP | COPY | Required if expanded/replacement character set used |
| SOP Class UID | 0008,0016 | UI | 1.2.840.10008.5.1.4.1.1.7 | ALWAYS | AUTO | - |
| SOP Instance UID | 0008,0018 | UI | | ALWAYS | AUTO | - |
| Instance Number | 0020,0013 | IS | | ANAP | AUTO | - |

## 9.1.2. Usage of Attributes from Received IOD

The following table lists the functionality supported by this application.

**Table 267: Functionalities**

| Functionality | Type1 | Optional | Private |
|---|---|---|---|
| Cath Viewer | X | | |

### 9.1.2.1. Usage of the Functionality Cath Viewer

Next table shows the SOP classes supported by the Cath. Viewer.

**Table 268: Supported SOP Classes for functionality Cath Viewer**

| SOP Class name | SOP Class UID |
|---|---|
| Computed Radiography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.1 |
| CT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.2 |
| Digital X-Ray Image Storage - For Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.1 |
| Digital X-Ray Image Storage - For Proc. SOP | 1.2.840.10008.5.1.4.1.1.1.1.1 |
| MR Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.4 |
| Nuclear Medicine Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.20 |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 |
| Ultrasound Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.6.1 |
| Ultrasound Multi-frame Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.3.1 |
| X-Ray Angiographic Bi-Plane Image Storage SOP Class (Retired) | 1.2.840.10008.5.1.4.1.1.12.3 |
| X-Ray Angiographic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.1 |
| X-Ray Radiofluoroscopic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.2 |

### 9.1.3. Attribute Mapping

Not applicable.

### 9.1.4. Coerced/Modified fields

Not applicable.

## 9.2. Data Dictionary of Private Attributes

Not applicable.

## 9.3. Coded Terminology and Templates

Not applicable.

### 9.3.1. Context Groups

Not applicable.

### 9.3.2. Template Specifications

Not applicable.

### 9.3.3. Private code definitions

Not applicable.

## 9.4. Grayscale Image consistency

Not applicable.

## 9.5. Standard Extended/Specialized/Private SOPs

### 9.5.1. Secondary Capture Image Storage SOP Class

**Table 269: Extended DICOM and private attributes for Secondary Storage SOP Class Instances**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Pregnancy Status | (0010,21C0 | US | ISO_IR 100 | ANAP | COPY | Required if expanded/replacement character set used |
| Study Comments | 0032,4000 | LT | 1.2.840.10008.5.1.4.1.1.7 | ALWAYS | AUTO | - |
| Special Needs | 0038,0050 | LO | | ALWAYS | AUTO | - |
| Patient State | 0038,0500 | LO | | ANAP | AUTO | |
| Performed Station AE Title | 0040,0241 | AE | | ANAP | AUTO | |
| Performed Station Name | 0040,0242 | SH | | ANAP | AUTO | |
| Performed Location | 0040,0243 | SH | | ANAP | AUTO | |
| Performed Procedure Step End Date | 0040,0250 | DA | | ANAP | AUTO | |
| Performed Procedure Step End Time | 0040,0251 | TM | | ANAP | AUTO | |
| Performed Procedure Step Status | 0040,0252 | CS | | ANAP | AUTO | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Performed Procedure Type Description | 0 040,0255 | LO | | ANAP | AUTO | |
| Film Consumption Sequence | 0040,0321 | SQ | | ANAP | AUTO | |

## 9.6. Private Transfer Syntaxes

Not applicable.

# 10. Annexes of application "Nuclear Medicine Viewer"

## 10.1. IOD Contents

### 10.1.1. Created SOP Instance

This section specifies each IOD created by this application.

**Note:**

The SOP classes created by Nuclear Medicine Viewer for IntelliSpace Cardiovascular are encoded with transfer syntax DICOM Explicit VR Little Endian (1.2.840.10008.1.2.1) only. Transfer syntax DICOM RLE Lossless (1.2.840.10008.1.2.5) is offered for creation but non-functional in this build.

This section specifies each IOD created (including private IOD's). It should specify the attribute name, tag, VR, and value. The value should specify the range and source (e.g. user input, Modality Worklist, automatically generated, etc.). For content items in templates, the range and source of the concept name and concept values should be specified. Whether the value is always present or not shall be specified.

Abbreviations used in the IOD tables for the column "Presence of Module" are:

| | |
|---|---|
| ALWAYS | The module is always present |
| CONDITIONAL | The module is used under specified condition |

Abbreviations used in the Module table for the column "Presence of Value" are:

| | |
|---|---|
| ALWAYS | The attribute is always present with a value |
| EMPTY | The attribute is always present without any value (attribute sent zero length) |
| VNAP | The attribute is always present and its Value is Not Always Present (attribute sent zero length if no value is present) |
| ANAP | The attribute is present under specified condition – if present then it will always have a value |

The abbreviations used in the Module table for the column "Source" are:

| | |
|---|---|
| AUTO | The attribute value is generated automatically |
| CONFIG | The attribute value source is a configurable parameter |
| COPY | The attribute value source is another SOP instance |
| FIXED | The attribute value is hard-coded in the application |
| IMPLICIT | The attribute value source is a user-implicit setting |
| MPPS | The attribute value is the same as that use for Modality Performed Procedure Step |
| MWL | The attribute value source is a Modality Worklist |
| USER | The attribute value source is explicit user input |

#### 10.1.1.1. List of created SOP Classes

**Table 270: List of created SOP Classes**

| SOP Class Name | SOP Class UID |
|---|---|
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 |

#### 10.1.1.2. Secondary Capture Image Storage SOP Class

**Table 271: IOD of Created Secondary Capture Image Storage SOP Class Instances**

| Information Entity | Module | Presence Of Module |
|---|---|---|
| Patient | Patient Module | ALWAYS |
| Study | General Study Module | ALWAYS |

| | | |
|---|---|---|
| Study | Patient Study Module | CONDITIONAL |
| Series | General Series Module | ALWAYS |
| Equipment | General Equipment Module | ALWAYS |
| Equipment | SC Equipment Module | ALWAYS |
| Image | General Image Module | ALWAYS |
| Image | Image Pixel Module | ALWAYS |
| Image | SC Image Module | ALWAYS |
| Image | SOP Common Module | ALWAYS |
| | Extended Dicom and Private attributes | |

**Table 272: Patient Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Patient's Name | 0010,0010 | PN | | VNAP | COPY | - |
| Patient ID | 0010,0020 | LO | | VNAP | COPY | - |
| Issuer of Patient ID | 0010,0021 | LO | | ANAP | COPY | - |
| Patient's Birth Date | 0010,0030 | DA | | VNAP | COPY | - |
| Patient's Sex | 0010,0040 | CS | F, M, O | VNAP | COPY | - |

**Table 273: General Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Study Date | 0008,0020 | DA | | VNAP | COPY | - |
| Study Time | 0008,0030 | TM | | VNAP | COPY | - |
| Accession Number | 0008,0050 | SH | | VNAP | AUTO | - |
| Referring Physician's Name | 0008,0090 | PN | | VNAP | COPY | - |
| Study Description | 0008,1030 | LO | | ANAP | COPY | - |
| Study Instance UID | 0020,000D | UI | | ALWAYS | COPY | - |
| Study ID | 0020,0010 | SH | | VNAP | AUTO | - |

**Table 274: Patient Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Admitting Diagnoses Description | 0008,1080 | LO | | ANAP | COPY | - |

**Table 275: General Series Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Series Date | 0008,0021 | DA | | ANAP | AUTO | - |
| Series Time | 0008,0031 | TM | | ANAP | AUTO | - |
| Modality | 0008,0060 | CS | | ALWAYS | AUTO | - |
| Series Description | 0008,103E | LO | | ANAP | AUTO | - |
| Series Instance UID | 0020,000E | UI | | ALWAYS | AUTO | - |
| Series Number | 0020,0011 | IS | | VNAP | AUTO | - |

### Table 276: General Equipment Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Manufacturer | 0008,0070 | LO | PHILIPS Nuclear Medicine | VNAP | COPY, AUTO | - |
| Institution Name | 0008,0080 | LO | | ANAP | COPY, AUTO | - |
| Station Name | 0008,1010 | SH | | ANAP | COPY, AUTO | - |
| Software Version(s) | 0018,1020 | LO | Value 1: AIM_DICOM_200 | ANAP | AUTO, COPY | - |

### Table 277: SC Equipment Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Modality | 0008,0060 | CS | NM | ANAP | AUTO | - |
| Conversion Type | 0008,0064 | CS | WSD | ALWAYS | AUTO | - |
| Secondary Capture Device Manufacturer | 0018,1016 | LO | | ANAP | AUTO | - |
| Secondary Capture Device Manufacturer's Model Name | 0018,1018 | LO | AutoQUANT | ANAP | AUTO | - |
| Secondary Capture Device Software Version(s) | 0018,1019 | LO | | ANAP | AUTO | - |
| Digital Image Format Acquired | 0018,1023 | LO | Screen capture | ANAP | AUTO | - |

### Table 278: General Image Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Image Type | 0008,0008 | CS | Value 1: DERIVED, SECONDARY | ANAP | AUTO | - |
| Acquisition Date | 0008,0022 | DA | | ANAP | AUTO | - |
| Content Date | 0008,0023 | DA | | VNAP | AUTO | - |
| Acquisition Time | 0008,0032 | TM | | ANAP | AUTO | - |
| Content Time | 0008,0033 | TM | | VNAP | AUTO | - |
| Derivation Description | 0008,2111 | ST | | ANAP | AUTO | - |
| Acquisition Number | 0020,0012 | IS | | ANAP | COPY | - |
| Instance Number | 0020,0013 | IS | | VNAP | AUTO | - |
| Patient Orientation | 0020,0020 | CS | | VNAP | AUTO | - |

### Table 279: Image Pixel Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Samples per Pixel | 0028,0002 | US | 3 | ALWAYS | AUTO | - |
| Photometric Interpretation | 0028,0004 | CS | RGB | ALWAYS | AUTO | - |
| Planar Configuration | 0028,0006 | US | 0x0000 | ALWAYS | AUTO | - |
| Rows | 0028,0010 | US | | ALWAYS | AUTO | - |
| Columns | 0028,0011 | US | | ALWAYS | AUTO | - |
| Bits Allocated | 0028,0100 | US | 8 | ALWAYS | AUTO | - |
| Bits Stored | 0028,0101 | US | 8 | ALWAYS | AUTO | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| High Bit | 0028,0102 | US | 7 | ALWAYS | AUTO | - |
| Pixel Representation | 0028,0103 | US | 0x0000 | ALWAYS | AUTO | - |
| Pixel Data | 7FE0,0010 | O W/ OB | | ALWAYS | AUTO | - |

**Table 280: SC Image Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Date of Secondary Capture | 0018,1012 | DA | | ANAP | AUTO | - |
| Time of Secondary Capture | 0018,1014 | TM | | ANAP | AUTO | - |

**Table 281: SOP Common Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Specific Character Set | 0008,0005 | CS | | ALWAYS | COPY | Required if expanded/replacement character set used |
| Instance Creation Date | 0008,0012 | DA | | ANAP | AUTO | - |
| Instance Creation Time | 0008,0013 | TM | | ANAP | AUTO | - |
| SOP Class UID | 0008,0016 | UI | 1.2.840.10008.5.1.4.1.1.7 | ALWAYS | AUTO | - |
| SOP Instance UID | 0008,0018 | UI | | ALWAYS | AUTO | - |
| Instance Number | 0020,0013 | IS | | ANAP | AUTO | - |

## 10.1.2. Usage of Attributes from Received IOD

The following table lists the functionality supported by this application.

**Table 282: Functionalities**

| Functionality | Type1 | Optional | Private |
|---|---|---|---|
| AutoQuant | X | | X |

### 10.1.2.1. Usage of the Functionality AutoQuant

The following table lists the supported SOP Classes which can be used by this application.

**Table 283: Supported SOP Classes for functionality AutoQuant**

| SOP Class name | SOP Class UID |
|---|---|
| Nuclear Medicine Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.20 |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 |

## 10.1.3. Attribute Mapping

Not applicable.

## 10.1.4. Coerced/Modified fields

Not applicable.

## 10.2. Data Dictionary of Private Attributes

Not applicable.

## 10.3. Coded Terminology and Templates

Not applicable.

### 10.3.1. Context Groups

Not applicable.

### 10.3.2. Template Specifications

Not applicable.

### 10.3.3. Private code definitions

Not applicable.

## 10.4. Grayscale Image consistency

Not applicable.

## 10.5. Standard Extended/Specialized/Private SOPs

Not applicable.

**Table 284: List of created SOP Classes**

| SOP Class Name | SOP Class UID |
|---|---|
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 |

### 10.5.1. Standard Extended/Specialized/Private SOP Instance

#### 10.5.1.1. Secondary Capture Image Storage SOP Class

**Table 285: Extended DICOM and private attributes for Secondary Capture Image Storage SOP Class Instances**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Referenced Series Sequence | 0008,1115 | SQ | | ALWAYS | AUTO | - |
| >Referenced Instance Sequence | 0008,114A | SQ | | ALWAYS | AUTO | - |
| >>Referenced SOP Class UID | 0008,1150 | UI | | VNAP | AUTO | - |
| >>Referenced SOP Instance UID | 0008,1155 | UI | | ALWAYS | AUTO | - |
| >Series Instance UID | 0020,000E | UI | | ALWAYS | AUTO | - |

## 10.6. Private Transfer Syntaxes

Not applicable.

# 11. Annexes of application "Ultrasound Analysis Package (QLAB)"

## 11.1. IOD Contents

### 11.1.1. Created SOP Instance

This section specifies each IOD created by this application.

Note that the Creation of Philips Private SONOS 7500 Live 3D Cartesian Storage (1.2.840.113543.6.6.1.3.1002) data requires a separate license.

This section specifies each IOD created (including private IOD's). It should specify the attribute name, tag, VR, and value. The value should specify the range and source (e.g. user input, Modality Worklist, automatically generated, etc.). For content items in templates, the range and source of the concept name and concept values should be specified. Whether the value is always present or not shall be specified.

Abbreviations used in the IOD tables for the column "Presence of Module" are:

| | |
|---|---|
| ALWAYS | The module is always present |
| CONDITIONAL | The module is used under specified condition |

Abbreviations used in the Module table for the column "Presence of Value" are:

| | |
|---|---|
| ALWAYS | The attribute is always present with a value |
| EMPTY | The attribute is always present without any value (attribute sent zero length) |
| VNAP | The attribute is always present and its Value is Not Always Present (attribute sent zero length if no value is present) |
| ANAP | The attribute is present under specified condition – if present then it will always have a value |

The abbreviations used in the Module table for the column "Source" are:

| | |
|---|---|
| AUTO | The attribute value is generated automatically |
| CONFIG | The attribute value source is a configurable parameter |
| COPY | The attribute value source is another SOP instance |
| FIXED | The attribute value is hard-coded in the application |
| IMPLICIT | The attribute value source is a user-implicit setting |
| MPPS | The attribute value is the same as that use for Modality Performed Procedure Step |
| MWL | The attribute value source is a Modality Worklist |
| USER | The attribute value source is explicit user input |

#### 11.1.1.1. List of created SOP Classes

**Table 286: List of created SOP Classes**

| SOP Class Name | SOP Class UID |
|---|---|
| Comprehensive SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.33 |
| Ultrasound Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.6.1 |
| Ultrasound Multi-frame Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.3.1 |
| Philips Private SONOS 7500 Live 3D Cartesian Storage | 1.2.840.113543.6.6.1.3.1002 |

#### 11.1.1.2. Comprehensive SR SOP Class

**Table 287: IOD of Created Comprehensive SR SOP Class Instances**

| Information Entity | Module | Presence Of Module |
|---|---|---|
| Patient | Patient Module | ALWAYS |

| | | |
|---|---|---|
| Study | General Study Module | ALWAYS |
| Series | SR Document Series Module | ALWAYS |
| Equipment | General Equipment Module | ALWAYS |
| Document | SR Document General Module | ALWAYS |
| | SR Document Content Module | ALWAYS |
| Document | SOP Common Module | ALWAYS |
| | Extended Dicom and Private attributes | ALWAYS |

**Table 288: Patient Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Patient's Name | 0010,0010 | PN | | VNAP | COPY | - |
| Patient ID | 0010,0020 | LO | | VNAP | COPY | - |
| Patient's Birth Date | 0010,0030 | DA | | VNAP | COPY | - |
| Patient's Sex | 0010,0040 | CS | F, M, O | VNAP | COPY | - |

**Table 289: General Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Study Date | 0008,0020 | DA | | ALWAYS | COPY | - |
| Study Time | 0008,0030 | TM | | ALWAYS | COPY | - |
| Accession Number | 0008,0050 | SH | | VNAP | COPY | - |
| Referring Physician's Name | 0008,0090 | PN | | VNAP | COPY | - |
| Study Instance UID | 0020,000D | UI | | ALWAYS | COPY | - |
| Study ID | 0020,0010 | SH | | EMPTY | AUTO | - |

**Table 290: SR Document Series Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Modality | 0008,0060 | CS | SR | ALWAYS | AUTO | - |
| Referenced Performed Procedure Step Sequence | 0008,1111 | SQ | | EMPTY | AUTO | EMPTY |
| Series Instance UID | 0020,000E | UI | | ALWAYS | AUTO | - |
| Series Number | 0020,0011 | IS | | ALWAYS | AUTO | - |

**Table 291: General Equipment Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Manufacturer | 0008,0070 | LO | Philips Medical System | ALWAYS | COPY | - |
| Manufacturer's Model Name | 0008,1090 | LO | QLAB | ALWAYS | AUTO | - |
| Software Version(s) | 0018,1020 | LO | | ALWAYS | AUTO | - |

**Table 292: SR Document General Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Content Date | 0008,0023 | DA | | ALWAYS | AUTO | - |
| Content Time | 0008,0033 | TM | | ALWAYS | AUTO | - |
| Instance Number | 0020,0013 | IS | | ALWAYS | COPY | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| Performed Procedure Code Sequence | 0040,A372 | SQ | | EMPTY | AUTO | - |
| Completion Flag | 0040,A491 | CS | PARTIAL | ALWAYS | AUTO | - |
| Verification Flag | 0040,A493 | CS | UNVERIFIED | ALWAYS | AUTO | - |

**Table 293: SR Document Content Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Value Type | 0040,A040 | CS | CONTAINER | ALWAYS | AUTO | - |
| Concept Name Code Sequence | 0040,A043 | SQ | | ALWAYS | AUTO | - |
| >Code Value | 0008,0100 | SH | | ALWAYS | AUTO | - |
| >Coding Scheme Designator | 0008,0102 | SH | | ALWAYS | AUTO | - |
| >Code Meaning | 0008,0104 | LO | | ALWAYS | AUTO | - |
| Concept Code Sequence | 0040,A168 | SQ | | ALWAYS | AUTO | - |
| >Code Value | 0008,0100 | SH | | ALWAYS | AUTO | - |
| >Coding Scheme Designator | 0008,0102 | SH | | ALWAYS | AUTO | - |
| >Code Meaning | 0008,0104 | LO | | ALWAYS | AUTO | - |
| Continuity Of Content | 0040,A050 | CS | | ALWAYS | AUTO | - |
| Content Template Sequence | 0040,A504 | SQ | | ANAP | AUTO | - |
| >Mapping Resource | 0008,0105 | CS | | ALWAYS | AUTO | |
| >Template Identifier | 0040,DB00 | CS | | ALWAYS | AUTO | - |
| Content Sequence | 0040,A730 | SQ | | ANAP | AUTO | - |
| >Relationship Type | 0040,A010 | CS | CONTAINS | ALWAYS | AUTO | - |
| >Value Type | 0040,A040 | CS | | ALWAYS | AUTO | - |
| >Concept Name Code Sequence | 0040,A043 | SQ | | ALWAYS | AUTO | - |
| >Continuity Of Content | 0040,A050 | CS | SEPARATE | ALWAYS | AUTO | - |

**Table 294: SOP Common Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Specific Character Set | 0008,0005 | CS | | ANAP | AUTO | Required if expanded/replacement character set used |
| SOP Class UID | 0008,0016 | UI | 1.2.840.10008.5.1.4.1.1.88.33 | ALWAYS | AUTO | - |
| SOP Instance UID | 0008,0018 | UI | | ALWAYS | AUTO | - |

### 11.1.1.3. Ultrasound Image Storage SOP Class

**Table 295: IOD of Created Ultrasound Image Storage SOP Class Instances**

| Information Entity | Module | Presence Of Module |
|---|---|---|
| Patient | Patient Module | ALWAYS |
| Study | General Study Module | ALWAYS |
| Series | General Series Module | ALWAYS |
| Equipment | General Equipment Module | ALWAYS |
| Image | General Image Module | ALWAYS |
| Image | Image Pixel Module | ALWAYS |
| Image | US Image Module | ALWAYS |

| | | |
|---|---|---|
| Image | SOP Common Module | ALWAYS |
| | Extended Dicom and Private attributes | ALWAYS |

**Table 296: Patient Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Patient's Name | 0010,0010 | PN | | VNAP | COPY | - |
| Patient ID | 0010,0020 | LO | | VNAP | COPY | - |
| Patient's Birth Date | 0010,0030 | DA | | VNAP | COPY | - |
| Patient's Sex | 0010,0040 | CS | F, M, O | VNAP | COPY | - |
| Other Patient IDs | 0010,1000 | LO | | ANAP | COPY | - |
| Patient Comments | 0010,4000 | LT | | ANAP | COPY | - |

**Table 297: General Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Study Date | 0008,0020 | DA | | ALWAYS | COPY | - |
| Study Time | 0008,0030 | TM | | ALWAYS | COPY | - |
| Accession Number | 0008,0050 | SH | | VNAP | COPY | - |
| Referring Physician's Name | 0008,0090 | PN | | VNAP | COPY | - |
| Study Description | 0008,1030 | LO | | ANAP | COPY | - |
| Study Instance UID | 0020,000D | UI | | ALWAYS | COPY | - |
| Study ID | 0020,0010 | SH | | VNAP | AUTO | - |

**Table 298: General Series Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Series Date | 0008,0021 | DA | | ANAP | AUTO | - |
| Series Time | 0008,0031 | TM | | ANAP | AUTO | - |
| Modality | 0008,0060 | CS | US | ALWAYS | COPY | - |
| Series Description | 0008,103E | LO | | ANAP | AUTO | - |
| Series Instance UID | 0020,000E | UI | | ALWAYS | AUTO | - |
| Series Number | 0020,0011 | IS | | VNAP | AUTO | - |
| Performed Procedure Step Start Date | 0040,0244 | DA | | ANAP | AUTO | - |
| Performed Procedure Step Start Time | 0040,0245 | TM | | ANAP | AUTO | - |
| Performed Procedure Step ID | 0040,0253 | SH | | ANAP | AUTO | - |
| Performed Procedure Step Description | 0040,0254 | LO | | ANAP | AUTO | - |

**Table 299: General Equipment Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Manufacturer | 0008,0070 | LO | Philips Medical Systems | ALWAYS | AUTO | - |
| Manufacturer's Model Name | 0008,1090 | LO | QLAB | ALWAYS | AUTO | - |

### Table 300: General Image Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Image Type | 0008,0008 | CS | | ANAP | AUTO | - |
| Content Date | 0008,0023 | DA | | VNAP | AUTO | - |
| Content Time | 0008,0033 | TM | | VNAP | AUTO | - |
| Derivation Description | 0008,2111 | ST | | ANAP | AUTO | - |
| Instance Number | 0020,0013 | IS | | VNAP | AUTO | - |

### Table 301: Image Pixel Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Samples per Pixel | 0028,0002 | US | | ALWAYS | AUTO | - |
| Photometric Interpretation | 0028,0004 | CS | | ALWAYS | AUTO | - |
| Planar Configuration | 0028,0006 | US | | ALWAYS | AUTO | - |
| Rows | 0028,0010 | US | | ALWAYS | AUTO | - |
| Columns | 0028,0011 | US | | ALWAYS | AUTO | - |
| Bits Allocated | 0028,0100 | US | | ALWAYS | AUTO | - |
| Bits Stored | 0028,0101 | US | | ALWAYS | AUTO | - |
| High Bit | 0028,0102 | US | | ALWAYS | AUTO | - |
| Pixel Representation | 0028,0103 | US | | ALWAYS | AUTO | - |
| Pixel Data | 7FE0,0010 | O W/ OB | | ALWAYS | AUTO | - |

### Table 302: US Image Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Image Type | 0008,0008 | CS | Value 1: DERIVED, Value 2: SECONDARY | ALWAYS | AUTO | - |
| Stage Name | 0008,2120 | SH | | ANAP | AUTO | - |
| Stage Number | 0008,2122 | IS | | ANAP | AUTO | - |
| Samples per Pixel | 0028,0002 | US | 3 | ALWAYS | AUTO | - |
| Photometric Interpretation | 0028,0004 | CS | YBR_FULL_422 | ALWAYS | AUTO | - |
| Planar Configuration | 0028,0006 | US | 0x0000 | ALWAYS | AUTO | - |
| Bits Allocated | 0028,0100 | US | 8 | ALWAYS | AUTO | - |
| Bits Stored | 0028,0101 | US | 8 | ALWAYS | AUTO | - |
| High Bit | 0028,0102 | US | 7 | ALWAYS | AUTO | - |
| Pixel Representation | 0028,0103 | US | 0 | ALWAYS | AUTO | - |
| Lossy Image Compression | 0028,2110 | CS | 01 | ANAP | AUTO | Required if Lossy Compression has been performed on the image. |

### Table 303: SOP Common Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| SOP Class UID | 0008,0016 | UI | 1.2.840.10008.5.1.4.1.1.6.1 | ALWAYS | AUTO | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| SOP Instance UID | 0008,0018 | UI | | ALWAYS | AUTO | - |
| Instance Number | 0020,0013 | IS | | ANAP | AUTO | - |

#### 11.1.1.4. Ultrasound Multi-frame Image Storage SOP Class

**Table 304: IOD of Created Ultrasound Multi-frame Image Storage SOP Class Instances**

| Information Entity | Module | Presence Of Module |
|---|---|---|
| Patient | Patient Module | ALWAYS |
| Study | General Study Module | ALWAYS |
| Series | General Series Module | ALWAYS |
| Equipment | General Equipment Module | ALWAYS |
| Image | General Image Module | ALWAYS |
| Image | Image Pixel Module | ALWAYS |
| Image | Cine Module | ALWAYS |
| Image | Multi-Frame Module | ALWAYS |
| Image | US Region Calibration Module | ALWAYS |
| Image | US Image Module | ALWAYS |
| Image | SOP Common Module | ALWAYS |
| | Extended Dicom and Private attributes | CONDITIONAL |

**Table 305: Patient Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Patient's Name | 0010,0010 | PN | | VNAP | AUTO | - |
| Patient ID | 0010,0020 | LO | | VNAP | AUTO | - |
| Patient's Birth Date | 0010,0030 | DA | | VNAP | AUTO | - |
| Patient's Sex | 0010,0040 | CS | F, M, O | VNAP | AUTO | - |
| Other Patient IDs | 0010,1000 | LO | | ANAP | AUTO | - |
| Patient Comments | 0010,4000 | LT | | ANAP | AUTO | - |

**Table 306: General Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Study Date | 0008,0020 | DA | | VNAP | AUTO | - |
| Study Time | 0008,0030 | TM | | VNAP | AUTO | - |
| Accession Number | 0008,0050 | SH | | VNAP | AUTO | - |
| Referring Physician's Name | 0008,0090 | PN | | VNAP | AUTO | - |
| Study Description | 0008,1030 | LO | | ANAP | AUTO | - |
| Study Instance UID | 0020,000D | UI | | ALWAYS | AUTO | - |
| Study ID | 0020,0010 | SH | | VNAP | AUTO | - |

**Table 307: General Series Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Series Date | 0008,0021 | DA | | ANAP | AUTO | - |
| Series Time | 0008,0031 | TM | | ANAP | AUTO | - |
| Modality | 0008,0060 | CS | US | ALWAYS | AUTO | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| Operator's Name | 0008,1070 | PN | | ANAP | AUTO | - |
| Referenced Performed Procedure Step Sequence | 0008,1111 | SQ | | ANAP | AUTO | - |
| >Referenced SOP Class UID | 0008,1150 | UI | | ALWAYS | AUTO | - |
| >Referenced SOP Instance UID | 0008,1155 | UI | | ALWAYS | AUTO | - |
| Protocol Name | 0018,1030 | LO | | ANAP | AUTO | - |
| Series Instance UID | 0020,000E | UI | | ALWAYS | AUTO | - |
| Series Number | 0020,0011 | IS | | ALWAYS | AUTO | - |
| Performed Procedure Step Start Date | 0040,0244 | DA | | ANAP | AUTO | - |
| Performed Procedure Step Start Time | 0040,0245 | TM | | ANAP | AUTO | - |
| Performed Procedure Step ID | 0040,0253 | SH | | ANAP | AUTO | - |
| Performed Procedure Step Description | 0040,0254 | LO | | ANAP | AUTO | - |
| Comments on the Performed Procedure Step | 0040,0280 | ST | | ANAP | AUTO | - |

**Table 308: General Equipment Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Manufacturer | 0008,0070 | LO | Philips Medical Systems | ALWAYS | AUTO | - |
| Institution Name | 0008,0080 | LO | | ANAP | AUTO | - |
| Station Name | 0008,1010 | SH | | ANAP | AUTO | - |
| Manufacturer's Model Name | 0008,1090 | LO | QLAB | ANAP | AUTO | - |
| Device Serial Number | 0018,1000 | LO | | ANAP | AUTO | - |
| Software Version(s) | 0018,1020 | LO | | ANAP | AUTO | - |

**Table 309: General Image Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Image Type | 0008,0008 | CS | | ANAP | AUTO | - |
| Content Date | 0008,0023 | DA | | VNAP | AUTO | - |
| Acquisition DateTime | 0008,002A | DT | | ANAP | AUTO | - |
| Content Time | 0008,0033 | TM | | VNAP | AUTO | - |
| Derivation Description | 0008,2111 | ST | QLAB Clip | ANAP | AUTO | - |
| Instance Number | 0020,0013 | IS | | VNAP | AUTO | - |
| Burned In Annotation | 0028,0301 | CS | NO | ALWAYS | AUTO | - |
| Lossy Image Compression | 0028,2110 | CS | | ANAP | AUTO | - |
| Lossy Image Compression Ratio | 0028,2112 | DS | | ANAP | AUTO | - |
| Lossy Image Compression Method | 0028,2114 | CS | | ANAP | AUTO | - |
| Presentation LUT Shape | 2050,0020 | CS | | ANAP | AUTO | - |

### Table 310: Image Pixel Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Samples per Pixel | 0028,0002 | US | | ALWAYS | AUTO | - |
| Photometric Interpretation | 0028,0004 | CS | | ALWAYS | AUTO | - |
| Planar Configuration | 0028,0006 | US | | ALWAYS | AUTO | - |
| Rows | 0028,0010 | US | | ALWAYS | AUTO | - |
| Columns | 0028,0011 | US | | ALWAYS | AUTO | - |
| Bits Allocated | 0028,0100 | US | 8 | ALWAYS | AUTO | - |
| Bits Stored | 0028,0101 | US | 8 | ALWAYS | AUTO | - |
| High Bit | 0028,0102 | US | 7 | ALWAYS | AUTO | - |
| Pixel Representation | 0028,0103 | US | | ALWAYS | AUTO | - |
| Pixel Data | 7FE0,0010 | O W/ OB | | ALWAYS | AUTO | - |

### Table 311: Cine Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Frame Time | 0018,1063 | DS | | ALWAYS | AUTO | - |

### Table 312: Multi-Frame Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Number of Frames | 0028,0008 | IS | | ALWAYS | AUTO | - |
| Frame Increment Pointer | 0028,0009 | AT | Value 1: 00181065 | ALWAYS | AUTO | - |

### Table 313: US Region Calibration Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Sequence of Ultrasound Regions | 0018,6011 | SQ | | ALWAYS | AUTO | - |
| > Region Spatial Format | 0018,6012 | US | | ALWAYS | AUTO | - |
| > Region Data Type | 0018,6014 | US | | ALWAYS | AUTO | - |
| >Region Flags | 0018,6016 | UL | | ALWAYS | AUTO | - |
| > Region Location Min x0 | 0018,6018 | UL | | ALWAYS | AUTO | - |
| > Region Location Min y0 | 0018,601A | UL | | ALWAYS | AUTO | - |
| > Region Location Max x1 | 0018,601C | UL | | ALWAYS | AUTO | - |
| > Region Location Max y1 | 0018,601E | UL | | ALWAYS | AUTO | - |
| > Physical Units X Direction | 0018,6024 | UL | | ALWAYS | AUTO | - |
| >Physical Units Y Direction | 0018,6026 | UL | | ALWAYS | AUTO | - |
| >Physical Delta X | 0018,602C | UL | | ALWAYS | AUTO | - |
| >Physical Delta Y | 0018,602E | UL | | ALWAYS | AUTO | - |

**Table 314: US Image Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Image Type | 0008,0008 | CS | Value 1: DERIVED, Value 2: SECONDARY | VNAP | AUTO | - |
| Acquisition DateTime | 0008,002A | DT | | ALWAYS | AUTO | - |
| Stage Name | 0008,2120 | SH | | ANAP | AUTO | - |
| Stage Number | 0008,2122 | IS | | ANAP | AUTO | - |
| Number of Stages | 0008,2124 | IS | | VNAP | AUTO | - |
| View Name | 0008,2127 | SH | | ANAP | AUTO | - |
| View Number | 0008,2128 | IS | | ANAP | AUTO | - |
| Number of Event Timers | 0008,2129 | IS | | ANAP | AUTO | - |
| Number of Views in Stage | 0008,212A | IS | | VNAP | AUTO | - |
| Event Elapsed Time(s) | 0008,2130 | DS | | ANAP | AUTO | - |
| Event Timer Name(s) | 0008,2132 | LO | | ANAP | AUTO | - |
| Heart Rate | 0018,1088 | IS | | ANAP | AUTO | - |
| Transducer Data | 0018,5010 | LO | | ANAP | AUTO | - |
| Processing Function | 0018,5020 | LO | | ANAP | AUTO | - |
| Samples Per Pixel | 0028,0002 | US | | ALWAYS | AUTO | - |
| Photometric Interpretation | 0028,0004 | CS | | ALWAYS | AUTO | - |
| Planar Configuration | 0028,0006 | US | | ALWAYS | AUTO | - |
| Frame Increment Pointer | 0028,0009 | AT | 0x00181065 | ALWAYS | AUTO | - |
| Ultrasound Color Data Present | 0028,0014 | US | | ANAP | AUTO | - |
| Bits Allocated | 0028,0100 | US | 8 | ALWAYS | AUTO | - |
| Bits Stored | 0028,0101 | US | 8 | ALWAYS | AUTO | - |
| High Bit | 0028,0102 | US | 7 | ALWAYS | AUTO | - |
| Pixel Representation | 0028,0103 | US | 0x0000 | ALWAYS | AUTO | - |
| Lossy Image Compression | 0028,2110 | CS | 01 | ALWAYS | AUTO | - |
| Stage Code Sequence | 0040,000A | SQ | | ANAP | AUTO | - |
| >Code Value | 0008,0100 | SH | | ALWAYS | AUTO | - |
| >Coding Scheme Designator | 0008,0102 | SH | | ALWAYS | AUTO | - |
| >Code Meaning | 0008,0104 | LO | | ALWAYS | AUTO | - |
| View Code Sequence | 0054,0220 | SQ | | ANAP | AUTO | - |
| >Code Value | 0008,0100 | SH | | ALWAYS | AUTO | - |
| >Coding Scheme Designator | 0008,0102 | SH | | ALWAYS | AUTO | - |
| >Code Meaning | 0008,0104 | LO | | ALWAYS | AUTO | - |

**Table 315: SOP Common Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Instance Creation Date | 0008,0012 | DA | | ANAP | AUTO | |
| Instance Creation Time | 0008,0013 | TM | | ANAP | AUTO | - |
| Instance Number | 0020,0013 | IS | | ANAP | AUTO | |
| SOP Class UID | 0008,0016 | UI | 1.2.840.10008.5.1.4.1.1.3.1 | ALWAYS | AUTO | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| SOP Instance UID | 0008,0018 | UI | | ALWAYS | AUTO | - |

### 11.1.2. Usage of Attributes from Received IOD

The following table lists the functionality supported by this application.

**Table 316: Functionalities**

| Functionality | Type1 | Optional | Private |
|---|---|---|---|
| QLab | X | | |

#### 11.1.2.1. Usage of the Functionality QLab

The following table lists the supported SOP Classes which can be used by this application.

**Table 317: Supported SOP Classes for functionality QLab**

| SOP Class name | SOP Class UID |
|---|---|
| Ultrasound Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.6.1 |
| Ultrasound Multi-frame Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.3.1 |
| Philips Private iE33 3D NEO Presentation State Subpage Storage | 1.3.46.670589.2.5.1.1 |
| Ultrasound Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.6 |
| Ultrasound Multi-frame Image Storage (Retired) | 1.2.840.10008.5.1.4.1.1.3 |
| Philips Private SONOS 7500 Live 3D Frustrum Storage | 1.2.840.113543.6.6.1.3.1001 |
| Philips Private SONOS 7500 Live 3D Cartesian Storage | 1.2.840.113543.6.6.1.3.1002 |

### 11.1.3. Attribute Mapping

Not applicable.

### 11.1.4. Coerced/Modified fields

Not applicable.

## 11.2. Data Dictionary of Private Attributes

Not applicable.

## 11.3. Coded Terminology and Templates

Adult Echocardiography Structured Report is based on the Template ID 5200.

### 11.3.1. Context Groups

Not applicable.

### 11.3.2. Template Specifications

Not applicable.

### 11.3.3. Private code definitions

Not applicable.

## 11.4. Grayscale Image consistency

Not applicable.

## 11.5. Standard Extended/Specialized/Private SOPs

Not applicable.

**Table 318: List of created SOP Classes**

| SOP Class Name | SOP Class UID |
|---|---|
| Comprehensive SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.33 |
| Ultrasound Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.6.1 |
| Ultrasound Multi-frame Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.3.1 |
| Philips Private SONOS 7500 Live 3D Cartesian Storage | 1.2.840.113543.6.6.1.3.1002 |

### 11.5.1. Standard Extended/Specialized/Private SOP Instance

#### 11.5.1.1. Comprehensive SR SOP Class

**Table 319: Extended DICOM and private attributes for Comprehensive SR SOP Class Instances**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Series Date | 0008,0021 | DA | | ALWAYS | AUTO | - |
| Series Time | 0008,0031 | TM | | ALWAYS | AUTO | - |
| Study Description | 0008,1030 | LO | | ANAP | AUTO | - |
| Series Description | 0008,103E | LO | | EMPTY | AUTO | - |
| Protocol Name | 0018,1030 | LO | | EMPTY | AUTO | - |

#### 11.5.1.2. Ultrasound Image Storage SOP Class

**Table 320: Extended DICOM and private attributes for Ultrasound Image Storage SOP Class Instances**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Conversion Type | 0008,0064 | CS | WSD | ANAP | AUTO | - |
| Performed Station AE Title | 0040,0241 | AE | | ANAP | AUTO | - |
| Performed Procedure Step End Date | 0040,0250 | DA | | ANAP | AUTO | - |
| Performed Procedure Step End Time | 0040,0251 | TM | | ANAP | AUTO | - |

#### 11.5.1.3. Ultrasound Multi-frame Image Storage SOP Class

**Table 321: Extended DICOM and private attributes for Ultrasound Multi-frame Image Storage SOP Class Instances**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Presentation Intent Type | 0008,0068 | CS | “FOR PRESENTATION” | ANAP | AUTO | - |

## 11.6. Private Transfer Syntaxes

Not applicable.

# 12. Annexes of application "Ultrasound Viewer"

## 12.1. IOD Contents

### 12.1.1. Created SOP Instance

Not Applicable. Ultrasound Viewer does not create SOP Instances.

### 12.1.2. Usage of Attributes from Received IOD

The following table lists the functionality supported by this application.

**Table 322: Functionalities**

| Functionality | Type1 | Optional | Private |
|---|---|---|---|
| Ultrasound Viewer | X | X | |

#### 12.1.2.1. Usage of the Functionality Ultrasound Viewer

The following table lists the supported SOP Classes which can be used by this application.

**Table 323: Supported SOP Classes for functionality Ultrasound Viewer**

| SOP Class name | SOP Class UID |
|---|---|
| Comprehensive SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.33 |
| Enhanced SR SOP Class | 1.2.840.10008.5.1.4.1.1.88.22 |
| Secondary Capture Image Storage SOP Class* | 1.2.840.10008.5.1.4.1.1.7 |
| Ultrasound Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.6.1 |
| Ultrasound Multi-frame Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.3.1 |
| Ultrasound Multi-frame Image Storage (Retired) SOP Class | 1.2.840.10008.5.1.4.1.1.3 |
| Ultrasound Image Storage (Retired) SOP Class | 1.2.840.10008.5.1.4.1.1.6 |
| Multi-frame True Color Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7.4 |

*Note:*

- Secondary Capture Image Storage SOP Class (1.2.840.10008.5.1.4.1.1.7) will only be accepted if the attribute “Modality” (0008,0060) contains one of the following values; “US”, “IVUS”, “SR”, “SC”, “OT” or “PR”.

### 12.1.3. Attribute Mapping

Not applicable.

### 12.1.4. Coerced/Modified fields

Not applicable.

## 12.2. Data Dictionary of Private Attributes

Not applicable.

## 12.3. Coded Terminology and Templates

Not applicable.

### 12.3.1. Context Groups

Not applicable.

### 12.3.2. Template Specifications

Not applicable.

### 12.3.3. Private code definitions

Not applicable.

## 12.4. Grayscale Image consistency

Not applicable.

## 12.5. Standard Extended/Specialized/Private SOPs

Not applicable.

## 12.6. Private Transfer Syntaxes

Not applicable.

# 13. Annexes of application "ViewForum"

## 13.1. IOD Contents

### 13.1.1. Created SOP Instance

The created DICOM SOP classes will be described in the next sections.

This section specifies each IOD created (including private IOD's). It should specify the attribute name, tag, VR, and value. The value should specify the range and source (e.g. user input, Modality Worklist, automatically generated, etc.). For content items in templates, the range and source of the concept name and concept values should be specified. Whether the value is always present or not shall be specified.

Abbreviations used in the IOD tables for the column "Presence of Module" are:

| | |
|---|---|
| ALWAYS | The module is always present |
| CONDITIONAL | The module is used under specified condition |

Abbreviations used in the Module table for the column "Presence of Value" are:

| | |
|---|---|
| ALWAYS | The attribute is always present with a value |
| EMPTY | The attribute is always present without any value (attribute sent zero length) |
| VNAP | The attribute is always present and its Value is Not Always Present (attribute sent zero length if no value is present) |
| ANAP | The attribute is present under specified condition – if present then it will always have a value |

The abbreviations used in the Module table for the column "Source" are:

| | |
|---|---|
| AUTO | The attribute value is generated automatically |
| CONFIG | The attribute value source is a configurable parameter |
| COPY | The attribute value source is another SOP instance |
| FIXED | The attribute value is hard-coded in the application |
| IMPLICIT | The attribute value source is a user-implicit setting |
| MPPS | The attribute value is the same as that use for Modality Performed Procedure Step |
| MWL | The attribute value source is a Modality Worklist |
| USER | The attribute value source is explicit user input |

#### 13.1.1.1. List of created SOP Classes

**Table 324: List of created SOP Classes**

| SOP Class Name | SOP Class UID |
|---|---|
| Computed Radiography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.1 |
| CT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.2 |
| Grayscale Softcopy Presentation State Storage SOP Class | 1.2.840.10008.5.1.4.1.1.11.1 |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 |
| X-Ray Angiographic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.1 |
| X-Ray Radiofluoroscopic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.2 |
| MR Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.4 |
| Philips Private ViewForum 3D Volume Object New Storage | 1.3.46.670589.5.0.2.1 |
| Philips Private ViewForum 3D Volume New Storage | 1.3.46.670589.5.0.1.1 |

#### 13.1.1.2. Computed Radiography Image Storage SOP Class

**Table 325: IOD of Created Computed Radiography Image Storage SOP Class Instances**

| Information Entity | Module | Presence Of Module |
|---|---|---|
| Patient | Patient Module | ALWAYS |
| Study | General Study Module | ALWAYS |
| Study | Patient Study Module | ALWAYS |
| Series | General Series Module | ALWAYS |
| Series | CR Series Module | ALWAYS |
| Equipment | General Equipment Module | ALWAYS |
| Image | General Image Module | ALWAYS |
| Image | Image Pixel Module | ALWAYS |
| Image | CR Image Module | ALWAYS |
| Image | SOP Common Module | ALWAYS |
| | Extended Dicom and Private attributes | ALWAYS |

**Table 326: Patient Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Patient's Name | 0010,0010 | PN | | VNAP | COPY | - |
| Patient ID | 0010,0020 | LO | | VNAP | COPY | - |
| Issuer of Patient ID | 0010,0021 | LO | | ANAP | COPY | - |
| Patient's Birth Date | 0010,0030 | DA | | VNAP | COPY | - |
| Patient's Sex | 0010,0040 | CS | | VNAP | COPY | - |

**Table 327: General Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Study Date | 0008,0020 | DA | | ALWAYS | COPY | - |
| Study Time | 0008,0030 | TM | | ALWAYS | COPY | - |
| Accession Number | 0008,0050 | SH | | ALWAYS | COPY | - |
| Referring Physician's Name | 0008,0090 | PN | | VNAP | COPY | - |
| Study Description | 0008,1030 | LO | | ANAP | COPY | - |
| Study Instance UID | 0020,000D | UI | | ALWAYS | COPY | - |
| Study ID | 0020,0010 | SH | | VNAP | COPY | - |

**Table 328: Patient Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Admitting Diagnoses Description | 0008,1080 | LO | | ANAP | COPY | - |

**Table 329: General Series Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Series Date | 0008,0021 | DA | | ALWAYS | AUTO | - |
| Series Time | 0008,0031 | TM | | ALWAYS | AUTO | - |
| Modality | 0008,0060 | CS | | ALWAYS | COPY | - |
| Body Part Examined | 0008,0060 | CS | | ANAP | COPY | - |
| Series Instance UID | 0020,000E | UI | | ALWAYS | AUTO | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| Series Number | 0020,0011 | IS | | VNAP | AUTO | - |
| Laterality | 0020,0060 | CS | | VNAP | AUTO | - |

**Table 330: CR Series Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Body Part Examined | 0018,0015 | CS | | VNAP | MPPS, USER | |
| Filter Type | 0018,1160 | SH | | ANAP | AUTO | |
| Collimator/grid Name | 0018,1180 | SH | | ANAP | AUTO | |
| Focal Spot | 0018,1190 | DS | | ANAP | AUTO | |
| Plate Type | 0018,1260 | SH | | ANAP | AUTO | |
| View Position | 0018,5101 | CS | | VNAP | AUTO | |

**Table 331: General Equipment Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Manufacturer | 0008,0070 | LO | Philips Medical Systems | ANAP | COPY | - |
| Institution Name | 0008,0080 | LO | | ALWAYS | AUTO | - |
| Station Name | 0008,1010 | SH | | ANAP | AUTO | - |
| Institutional Department Name | 0008,1040 | LO | | ANAP | AUTO | - |
| Manufacturer's Model Name | 0008,1090 | LO | ViewForum | ALWAYS | AUTO | - |
| Device Serial Number | 0018,1000 | LO | | | | |
| Software Version(s) | 0018,1020 | LO | Value 1: ViewForum 6.1", "PMS5.2 MIMIT EVIIMDictionary | ALWAYS | AUTO | - |
| Date of Last Calibration | 0018,1200 | DA | | ANAP | AUTO | - |
| Time of Last Calibration | 0018,1201 | TM | | ANAP | AUTO | - |

**Table 332: General Image Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Image Type | 0008,0008 | CS | Value 1: ORIGINAL, Value 2: SECONDARY | ALWAYS | AUTO | - |
| Content Date | 0008,0023 | DA | | ALWAYS | COPY | - |
| Content Time | 0008,0033 | TM | | ALWAYS | COPY | - |
| Acquisition Number | 0020,0012 | IS | | ANAP | COPY | - |
| Instance Number | 0020,0013 | IS | | ALWAYS | AUTO | - |
| Patient Orientation | 0020,0020 | CS | | ALWAYS | AUTO, CONFIG | |
| Image Comments | 0020,4000 | LT | | ANAP | AUTO | - |

**Table 333: Image Pixel Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Samples per Pixel | 0028,0002 | US | 1 | ALWAYS | AUTO | - |
| Photometric Interpretation | 0028,0004 | CS | | ALWAYS | AUTO | - |
| Rows | 0028,0010 | US | | ALWAYS | COPY | - |
| Columns | 0028,0011 | US | | ALWAYS | COPY | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| Bits Allocated | 0028,0100 | US | 16 | ALWAYS | COPY | - |
| Bits Stored | 0028,0101 | US | 15 | ALWAYS | COPY | - |
| High Bit | 0028,0102 | US | 14 | ALWAYS | COPY | - |
| Pixel Representation | 0028,0103 | US | | ALWAYS | COPY | - |
| Pixel Data | 7FE0,0010 | O W/ OB | | ALWAYS | AUTO | - |

**Table 334: CR Image Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| KVP | 0018,0060 | DS | | ANAP | COPY | - |
| Distance Source to Detector | 0018,1110 | DS | | ANAP | COPY | - |
| Exposure Time | 0018,1150 | IS | | ANAP | COPY | - |
| Exposure | 0018,1152 | IS | | ANAP | COPY | - |
| Imager Pixel Spacing | 0018,1164 | DS | | ANAP | COPY | - |
| Generator Power | 0018,1170 | IS | | ANAP | COPY | - |
| Acquisition Device Processing Description | 0018,1400 | LO | | ANAP | COPY | - |
| Sensitivity | 0018,6000 | DS | | ANAP | COPY | - |
| Photometric Interpretation | 0028,0004 | CS | MONOCHROME1, MONOCHROME2 | ALWAYS | COPY | - |
| Pixel Spacing | 0028,0030 | DS | | ALWAYS | COPY | - |

**Table 335: VOI LUT Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Window Center | 0028,1050 | DS | | ALWAYS | AUTO | |
| Window Width | 0028,1051 | DS | | ALWAYS | AUTO | - |

**Table 336: SOP Common Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Specific Character Set | 0008,0005 | CS | | ANAP | AUTO | Required if expanded/replacement character set used |
| SOP Class UID | 0008,0016 | UI | 1.2.840.10008.5.1.4.1.1.1 | ALWAYS | AUTO | - |
| SOP Instance UID | 0008,0018 | UI | | ALWAYS | AUTO | - |

### 13.1.1.3. CT Image Storage SOP Class

**Table 337: IOD of Created CT Image Storage SOP Class Instances**

| Information Entity | Module | Presence Of Module |
|---|---|---|
| Patient | Patient Module | ALWAYS |
| Study | General Study Module | ALWAYS |
| Study | Patient Study Module | ALWAYS |
| Series | General Series Module | ALWAYS |

| | | |
|---|---|---|
| Frame of Reference | Frame of Reference Module | ALWAYS |
| Equipment | General Equipment Module | ALWAYS |
| Image | General Image Module | ALWAYS |
| Image | Image Plane Module | ALWAYS |
| Image | Image Pixel Module | ALWAYS |
| Image | CT Image Module | ALWAYS |
| Image | SOP Common Module | ALWAYS |
| | Extended Dicom and Private attributes | ALWAYS |

**Table 338: Patient Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Patient's Name | 0010,0010 | PN | | VNAP | COPY | - |
| Patient ID | 0010,0020 | LO | | VNAP | COPY | - |
| Issuer of Patient ID | 0010,0021 | LO | | ANAP | COPY | - |
| Patient's Birth Date | 0010,0030 | DA | | VNAP | COPY | - |
| Patient's Birth Time | 0010,0032 | TM | | ALWAYS | AUTO | - |
| Patient's Sex | 0010,0040 | CS | | VNAP | COPY | - |

**Table 339: General Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Study Date | 0008,0020 | DA | | VNAP | COPY | - |
| Study Time | 0008,0030 | TM | | VNAP | COPY | - |
| Accession Number | 0008,0050 | SH | | VNAP | COPY | - |
| Referring Physician's Name | 0008,0090 | PN | | VNAP | COPY | - |
| Study Description | 0008,1030 | LO | | ANAP | COPY | - |
| Procedure Code Sequence | 0008,1032 | SQ | | ANAP | COPY | - |
| > Code Value | 0008,0100 | SH | | ALWAYS | COPY | - |
| > Coding Scheme Designator | 0008,0102 | SH | | ALWAYS | COPY | - |
| > Code Meaning | 0008,0104 | LO | | ALWAYS | COPY | - |
| Name of Physician(s) Reading Study | 0008,1060 | PN | | ANAP | COPY | - |
| Referenced Study Sequence | 0008,1110 | SQ | | ANAP | COPY | - |
| >Referenced SOP Class UID | 0008,1150 | UI | | ALWAYS | COPY | - |
| >Referenced SOP Instance UID | 0008,1155 | UI | | ALWAYS | COPY | - |
| Study Instance UID | 0020,000D | UI | | ALWAYS | COPY | - |
| Study ID | 0020,0010 | SH | | VNAP | COPY | - |

**Table 340: Patient Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Patient's Weight | 0010,1030 | DS | | ANAP | COPY | - |
| Patient's Age | 0010,1010 | | | ANAP | COPY | - |
| Admitting Diagnoses Description | 0008,1080 | LO | | ANAP | COPY | - |

**Table 341: General Series Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Series Date | 0008,0021 | DA | | ANAP | AUTO | - |
| Series Time | 0008,0031 | TM | | ANAP | AUTO | - |
| Modality | 0008,0060 | CS | | ALWAYS | COPY | - |
| Series Description | 0008,103E | LO | original | ANAP | COPY | - |
| Performing Physicians' Name | 0008,1050 | PN | | ANAP | COPY | - |
| Protocol Name | 0018,1030 | LO | | ANAP | COPY | - |
| Patient Position | 0018,5100 | CS | | VNAP | COPY | - |
| Series Instance UID | 0020,000E | UI | | ALWAYS | AUTO | - |
| Series Number | 0020,0011 | IS | | VNAP | AUTO | - |
| Performed Procedure Step Start Date | 0040,0244 | DA | | ANAP | AUTO | - |
| Performed Procedure Step Start Time | 0040,0245 | TM | | ANAP | AUTO | - |
| Performed Procedure Step ID | 0040,0253 | SH | | ANAP | AUTO | - |
| Performed Procedure Step Description | 0040,0254 | LO | | ANAP | COPY | - |

**Table 342: Frame of Reference Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Frame of Reference UID | 0020,0052 | UI | | ALWAYS | AUTO | - |
| Position Reference Indicator | 0020,1040 | LO | | VNAP | AUTO | - |

**Table 343: General Equipment Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Manufacturer | 0008,0070 | LO | Philips Medical Systems | VNAP | AUTO | - |
| Institution Name | 0008,0080 | LO | | ANAP | AUTO | - |
| Manufacturer's Model Name | 0008,1090 | LO | ViewForum | ANAP | AUTO | - |
| Software Version(s) | 0018,1020 | LO | Value 1:" ViewForum 6.1\PMS5.2 MIMIT EVIIMDictionary | ANAP | AUTO | - |

**Table 344: General Image Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Image Type | 0008,0008 | CS | | ANAP | COPY | - |
| Acquisition Date | 0008,0022 | DA | | ALWAYS | COPY | - |
| Content Date | 0008,0023 | DA | | ALWAYS | COPY | - |
| Acquisition Time | 0008,0032 | TM | | ALWAYS | COPY | - |
| Content Time | 0008,0033 | TM | | ALWAYS | COPY | - |
| Instance Number | 0020,0013 | IS | | ALWAYS | AUTO | - |

### Table 345: Image Plane Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Slice Thickness | 0018,0050 | DS | | VNAP | AUTO | - |
| Image Position (Patient) | 0020,0032 | DS | | ALWAYS | AUTO | - |
| Image Orientation (Patient) | 0020,0037 | DS | | ALWAYS | AUTO | - |
| Pixel Spacing | 0028,0030 | DS | | ALWAYS | AUTO | - |

### Table 346: Image Pixel Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Samples per Pixel | 0028,0002 | US | | ALWAYS | AUTO | - |
| Photometric Interpretation | 0028,0004 | CS | | ALWAYS | AUTO | - |
| Rows | 0028,0010 | US | | ALWAYS | AUTO | - |
| Columns | 0028,0011 | US | | ALWAYS | AUTO | - |
| Bits Allocated | 0028,0100 | US | 16 | ALWAYS | AUTO | - |
| Bits Stored | 0028,0101 | US | 12 | ALWAYS | AUTO | - |
| High Bit | 0028,0102 | US | 11 | ALWAYS | AUTO | - |
| Pixel Representation | 0028,0103 | US | 0x0000 | ALWAYS | AUTO | - |
| Pixel Data | 7FE0,0010 | O W/ OB | | ALWAYS | AUTO | - |

### Table 347: CT Image Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Image Type | 0008,0008 | CS | Value 1: ORIGINAL,<br>Value 2: PRIMARY,<br>Value 3: LOCALIZER | ALWAYS | AUTO | - |
| KVP | 0018,0060 | DS | | VNAP | AUTO | - |
| Acquisition Number | 0020,0012 | IS | | VNAP | AUTO | - |
| Samples per Pixel | 0028,0002 | US | 1 | ALWAYS | AUTO | - |
| Photometric Interpretation | 0028,0004 | CS | MONOCHROME1,<br>MONOCHROME2 | ALWAYS | AUTO | - |
| Bits Allocated | 0028,0100 | US | 16 | ALWAYS | AUTO | - |
| Bits Stored | 0028,0101 | US | 12 | ALWAYS | AUTO | - |
| High Bit | 0028,0102 | US | 11 | ALWAYS | AUTO | - |
| Rescale Intercept | 0028,1052 | DS | | ALWAYS | | - |
| Rescale Slope | 0028,1053 | DS | | ALWAYS | | - |

### Table 348: SOP Common Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Specific Character Set | 0008,0005 | CS | | ANAP | AUTO | Required if expanded/replacement character set used |

| | | | | | | |
|---|---|---|---|---|---|---|
| SOP Class UID | 0008,0016 | UI | 1.2.840.10008.5.1.4.1.1.2 , 1.2.840.10008.5.1.4.1.1.2 | ALWAYS | AUTO | - |
| SOP Instance UID | 0008,0018 | UI | | ALWAYS | AUTO | - |
| Instance Number | 0020,0013 | | | ANAP | AUTO | - |

#### 13.1.1.4. Grayscale Softcopy Presentation State Storage SOP Class

**Table 349: IOD of Created Grayscale Softcopy Presentation State Storage SOP Class Instances**

| Information Entity | Module | Presence Of Module |
|---|---|---|
| Patient | Patient Module | ALWAYS |
| Study | General Study Module | ALWAYS |
| Study | Patient Study Module | ALWAYS |
| Series | General Series Module | ALWAYS |
| Series | Presentation Series Module | ALWAYS |
| Equipment | General Equipment Module | ALWAYS |
| Presentation State | Presentation State Identification Module | ALWAYS |
| Presentation State | Presentation State Relationship Module | ALWAYS |
| Presentation State | Presentation State Shutter Module | CONDITIONAL |
| Presentation State | Displayed Area Module | CONDITIONAL |
| Presentation State | Graphic Annotation Module | CONDITIONAL |
| Presentation State | Graphic Layer Module | CONDITIONAL |
| Presentation State | Modality LUT Module | ALWAYS |
| Presentation State | Softcopy VOI LUT Module | ALWAYS |
| Presentation State | Softcopy Presentation LUT Module | ALWAYS |
| Presentation State | SOP Common Module | ALWAYS |
| | Extended Dicom and Private attributes | ALWAYS |

**Table 350: Patient Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Patient's Name | 0010,0010 | PN | | VNAP | COPY | - |
| Patient ID | 0010,0020 | LO | | VNAP | COPY | - |
| Patient's Birth Date | 0010,0030 | DA | | VNAP | COPY | - |
| Patient's Birth Time | 0010,0032 | TM | | ALWAYS | AUTO | - |
| Patient's Sex | 0010,0040 | CS | F, M, O | VNAP | COPY | - |

**Table 351: General Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Study Date | 0008,0020 | DA | | ALWAYS | COPY | - |
| Study Time | 0008,0030 | TM | | ALWAYS | COPY | - |
| Accession Number | 0008,0050 | SH | | VNAP | COPY | - |
| Referring Physician's Name | 0008,0090 | PN | | VNAP | COPY | - |
| Study Description | 0008,1030 | LO | | VNAP | COPY | - |
| Procedure Code Sequence | 0008,1032 | SQ | | ANAP | AUTO | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| Name of Physician(s) Reading Study | 0008,1060 | PN | | VNAP | COPY | - |
| Study Instance UID | 0020,000D | UI | | ALWAYS | COPY | - |
| Study ID | 0020,0010 | SH | | VNAP | COPY | - |

**Table 352: Patient Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Patient's Age | 0010,1010 | AS | | ANAP | COPY | - |
| Patient's Weight | 0010,1030 | DS | | VNAP | COPY | - |
| Admitting Diagnoses Description | 0008,1080 | LO | | ANAP | COPY | - |

**Table 353: General Series Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Series Date | 0008,0021 | DA | | ALWAYS | AUTO | - |
| Series Time | 0008,0031 | TM | | ALWAYS | AUTO | - |
| Modality | 0008,0060 | CS | PR | ALWAYS | AUTO | - |
| Referenced Performed Procedure Step Sequence | 0008,1111 | SQ | | ANAP | AUTO | - |
| >Referenced SOP Class UID | 0008,1150 | UI | | ALWAYS | AUTO | - |
| >Referenced SOP Instance UID | 0008,1155 | UI | | ALWAYS | AUTO | - |
| >Instance Creation Date | 0008,0012 | DA | | ANAP | AUTO | |
| >Instance Creation Time | 0008,0013 | TM | | ANAP | AUTO | - |
| >Instance Creator UID | 0008,0014 | UI | | ANAP | AUTO | - |
| Series Instance UID | 0020,000E | UI | | ALWAYS | AUTO | - |
| Series Number | 0020,0011 | IS | | ALWAYS | AUTO | - |
| Request Attributes Sequence | 0040,0275 | SQ | | ANAP | AUTO | - |
| Performed Procedure Step Start Date | 0040,0244 | DA | | ALWAYS | COPY | - |
| Performed Procedure Step Start Time | 0040,0245 | TM | | ALWAYS | COPY | - |
| Performed Procedure Step ID | 0040,0253 | SH | | ALWAYS | COPY | - |
| Performed Procedure Step Description | 0040,0254 | LO | | VNAP | COPY | - |
| Comments on the Performed Procedure Step | 0040,0280 | ST | | ANAP | AUTO | - |
| Body Part Examined | 0018,0015 | CS | | ANAP | AUTO | - |
| Protocol Name | 0018,1030 | LO | | ANAP | ALWAYS | - |

**Table 354: Presentation Series Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Modality | 0008,0060 | CS | PR | ALWAYS | AUTO | - |

**Table 355: General Equipment Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Manufacturer | 0008,0070 | LO | Philips Medical Systems | ALWAYS | AUTO | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| Institution Name | 0008,0080 | LO | | ALWAYS | AUTO | - |
| Manufacturer's Model Name | 0008,1090 | LO | ViewForum | ALWAYS | AUTO | - |
| Software Version(s) | 0018,1020 | LO | Value 1: ViewForum 6.1", "PMS5.2 MIMIT EVIIMDictionary | ALWAYS | AUTO | - |

**Table 356: Presentation State Identification Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Presentation Creation Date | 0070,0082 | DA | | ALWAYS | AUTO | - |
| Presentation Creation Time | 0070,0083 | TM | | ALWAYS | AUTO | - |
| Instance Number | 0020,0013 | IS | | ALWAYS | AUTO | - |
| Content Label | 0070,0080 | CS | NONE | ALWAYS | AUTO | - |
| Content Description | 0070,0081 | LO | | VNAP | AUTO | - |
| Content Creator's Name | 0070,0084 | PN | | VNAP | AUTO | - |

**Table 357: Presentation State Relationship Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Referenced Series Sequence | 0008,1115 | SQ | | ALWAYS | AUTO | - |
| >Referenced Image Sequence | 0008,1140 | SQ | | ALWAYS | AUTO | - |
| >>Referenced SOP Class UID | 0008,1150 | UI | | ALWAYS | AUTO | - |
| >>Referenced SOP Instance UID | 0008,1155 | UI | | ALWAYS | AUTO | - |
| >Series Instance UID | 0020,000E | UI | | ALWAYS | AUTO | - |

**Table 358: Presentation State Shutter Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Shutter Presentation Value | 0018,1622 | US | 0 | ANAP | AUTO | Required if display shutter module or bitmap display shutter module is present. |

**Table 359: Displayed Area Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Displayed Area Selection Sequence | 0070,005A | SQ | | ALWAYS | AUTO | - |
| >Displayed Area Top Left Hand Corner | 0070,0052 | SL | | ALWAYS | AUTO | - |
| >Displayed Area Bottom Right Hand Corner | 0070,0053 | SL | | ALWAYS | AUTO | - |
| >Presentation Size Mode | 0070,0100 | CS | SCALE TO FIT | ALWAYS | AUTO | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| >Presentation Pixel Spacing | 0070,0101 | DS | | ANAP | AUTO | Required if Presentation Size Mode (0070,0100) is TRUE SIZE, in which case the values will correspond to the physical distance between the center of each pixel on the display device. May be present if Presentation Size Mode (0070,0100) is SCALE TO FIT or MAGNIFY, in which case the values are used to compute the aspect ratio of the image pixels. |
| >Presentation Pixel Aspect Ratio | 0070,0102 | IS | | ANAP | AUTO | Required if Presentation Pixel Spacing (0070,0101) is not present. |

**Table 360: Graphic Annotation Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Graphic Annotation Sequence | 0070,0001 | SQ | | ANAP | AUTO | - |
| >Referenced Image Sequence | 0008,1140 | SQ | | ANAP | AUTO | - |
| >>Referenced SOP Class UID | 0008,1150 | UI | | ALWAYS | AUTO | - |
| >>Referenced SOP Instance UID | 0008,1155 | UI | | ALWAYS | AUTO | - |
| >Graphic Layer | 0070,0002 | CS | | ALWAYS | AUTO | - |
| >Text Object Sequence | 0070,0008 | SQ | | ANAP | AUTO | - |
| >>Anchor Point Annotation Units | 0070,0004 | CS | | ANAP | AUTO | - |
| >>Unformatted Text Value | 0070,0006 | ST | | ALWAYS | AUTO | - |
| >>Anchor Point Visibility | 0070,0015 | CS | | ANAP | AUTO | - |
| >Graphic Object Sequence | 0070,0009 | SQ | | ANAP | AUTO | - |
| >>Graphic Data | 0070,0022 | FL | | ALWAYS | AUTO | - |

**Table 361: Graphic Layer Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Graphic Layer Sequence | 0070,0060 | SQ | | ANAP | AUTO | - |
| >Graphic Layer | 0070,0002 | CS | | ALWAYS | AUTO | - |
| >Graphic Layer Order | 0070,0062 | IS | | ALWAYS | AUTO | - |
| >Graphic Layer Description | 0070,0068 | LO | | ANAP | AUTO | - |

**Table 362: Modality LUT Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Rescale Intercept | 0028,1052 | DS | | ANAP | AUTO | - |
| Rescale Slope | 0028,1053 | DS | | ANAP | AUTO | - |
| Rescale Type | 0028,1054 | LO | | ANAP | AUTO | - |

**Table 363: Softcopy VOI LUT Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Softcopy VOI LUT Sequence | 0028,3110 | SQ | | ALWAYS | AUTO | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| >Referenced Image Sequence | 0008,1140 | SQ | | ANAP | AUTO | Required if the VOI LUT transformation in this Item does not apply to all the images and frames listed in the Presentation State Relationship Module. |
| >>Referenced Frame Number | 0008,1160 | IS | | ALWAYS | AUTO | - |
| >>Referenced SOP Class UID | 0008,1150 | UI | | ALWAYS | AUTO | - |
| >>Referenced SOP Instance UID | 0008,1155 | UI | | ALWAYS | AUTO | - |
| >Window Center | 0028,1050 | DS | | ANAP | AUTO | - |
| >Window Width | 0028,1051 | DS | | ANAP | AUTO | - |

**Table 364: Softcopy Presentation LUT Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Presentation LUT Shape | 2050,0020 | CS | IDENTITY | ANAP | AUTO | - |

**Table 365: SOP Common Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Specific Character Set | 0008,0005 | CS | | ANAP | AUTO | Required if expanded/replacement character set used |
| SOP Class UID | 0008,0016 | UI | 1.2.840.10008.5.1.4.1.1.1 1.1 | ALWAYS | AUTO | - |
| SOP Instance UID | 0008,0018 | UI | | ALWAYS | AUTO | - |

### 13.1.1.5. Secondary Capture Image Storage SOP Class

**Table 366: IOD of Created Secondary Capture Image Storage SOP Class Instances**

| Information Entity | Module | Presence Of Module |
|---|---|---|
| Patient | Patient Module | ALWAYS |
| Study | General Study Module | ALWAYS |
| Study | Patient Study Module | ALWAYS |
| Series | General Series Module | ALWAYS |
| Equipment | General Equipment Module | ALWAYS |
| Equipment | SC Equipment Module | ALWAYS |
| Image | General Image Module | ALWAYS |
| Image | Image Pixel Module | ALWAYS |
| Image | SOP Common Module | ALWAYS |
| | Extended Dicom and Private attributes | ALWAYS |

**Table 367: Patient Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Patient's Name | 0010,0010 | PN | | VNAP | COPY | - |
| Patient ID | 0010,0020 | LO | | VNAP | COPY | - |
| Issuer of Patient ID | 0010,0021 | LO | | ANAP | COPY | - |
| Patient's Birth Date | 0010,0030 | DA | | VNAP | COPY | - |
| Patient's Birth Time | 0010,0032 | TM | | ALWAYS | AUTO | - |
| Patient's Sex | 0010,0040 | CS | F, M, O | VNAP | COPY | - |

### Table 368: General Study Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Study Date | 0008,0020 | DA | | VNAP | COPY | - |
| Study Time | 0008,0030 | TM | | VNAP | COPY | - |
| Accession Number | 0008,0050 | SH | | VNAP | COPY | - |
| Referring Physician's Name | 0008,0090 | PN | | VNAP | COPY | - |
| Study Description | 0008,1030 | LO | | VNAP | COPY | - |
| Procedure Code Sequence | 0008,1032 | SQ | | ANAP | COPY | - |
| Name of Physician(s) Reading Study | 0008,1060 | PN | | VNAP | COPY | - |
| Referenced Study Sequence | 0008,1110 | SQ | | ANAP | COPY | - |
| > Referenced SOP Class UID | 0008,1150 | UI | | ALWAYS | COPY | - |
| > Referenced SOP Instance UID | 0008,1155 | UI | | ALWAYS | COPY | - |
| Study Instance UID | 0020,000D | UI | | ALWAYS | COPY | - |
| Study ID | 0020,0010 | SH | | VNAP | COPY | - |

### Table 369: Patient Study Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Admitting Diagnoses Description | 0008,1080 | LO | | ANAP | COPY | - |

### Table 370: General Series Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Series Date | 0008,0021 | DA | | ANAP | AUTO | - |
| Series Time | 0008,0031 | TM | | ANAP | AUTO | - |
| Modality | 0008,0060 | CS | | ALWAYS | AUTO | - |
| Series Description | 0008,103E | LO | original, photo | ANAP | AUTO | - |
| Referenced Performed Procedure Step Sequence | 0008,1111 | SQ | | ANAP | AUTO | - |
| > Referenced SOP Class UID | 0008,1150 | UI | | ALWAYS | AUTO | - |
| > Referenced SOP Instance UID | 0008,1155 | UI | | ALWAYS | AUTO | - |
| > Instance Creation Date | 0008,0012 | DA | | ANAP | AUTO | - |
| > Instance Creation Time | 0008,0013 | TM | | ANAP | AUTO | - |
| > Instance Creator UID | 0008,0014 | UI | | ANAP | AUTO | - |
| Protocol Name | 0018,1030 | LO | | ANAP | COPY | - |
| Series Instance UID | 0020,000E | UI | | ALWAYS | AUTO | - |
| Series Number | 0020,0011 | IS | | VNAP | AUTO | - |
| Performed Procedure Step Start Date | 0040,0244 | DA | | ANAP | COPY | - |
| Performed Procedure Step Start Time | 0040,0245 | TM | | ANAP | COPY | - |
| Performed Procedure Step ID | 0040,0253 | SH | | ANAP | COPY | - |
| Performed Procedure Step Description | 0040,0254 | LO | | ANAP | COPY | - |

### Table 371: General Equipment Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Manufacturer | 0008,0070 | LO | Philips Medical Systems | VNAP | AUTO | - |
| Institution Name | 0008,0080 | LO | | ANAP | AUTO | - |
| Manufacturer's Model Name | 0008,1090 | LO | ViewForum | ANAP | AUTO | - |
| Software Version(s) | 0018,1020 | LO | Value 1: ViewForum 6.1", "PMS5.2 MIMIT EVIIMDictionary | ANAP | AUTO | - |

### Table 372: SC Equipment Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Modality | 0008,0060 | CS | OT | ANAP | COPY | - |
| Conversion Type | 0008,0064 | CS | WSD | ALWAYS | AUTO | - |

### Table 373: General Image Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Image Type | 0008,0008 | CS | Value 1: DERIVED, Value 2: SECONDARY | ANAP | AUTO | - |
| Acquisition Date | 0008,0022 | DA | | ANAP | COPY | - |
| Content Date | 0008,0023 | DA | | VNAP | COPY | - |
| Acquisition Time | 0008,0032 | TM | | ANAP | AUTO | - |
| Content Time | 0008,0033 | TM | | VNAP | COPY | - |
| Instance Number | 0020,0013 | IS | | VNAP | AUTO | - |
| Patient Orientation | 0020,0020 | CS | | VNAP | COPY | - |

### Table 374: Image Pixel Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Samples per Pixel | 0028,0002 | US | 3 | ALWAYS | AUTO | - |
| Photometric Interpretation | 0028,0004 | CS | RGB | ALWAYS | AUTO | - |
| Planar Configuration | 0028,0006 | US | 0x0000 | ALWAYS | AUTO | - |
| Rows | 0028,0010 | US | | ALWAYS | AUTO | - |
| Columns | 0028,0011 | US | | ALWAYS | AUTO | - |
| Bits Allocated | 0028,0100 | US | 8 | ALWAYS | AUTO | - |
| Bits Stored | 0028,0101 | US | 8 | ALWAYS | AUTO | - |
| High Bit | 0028,0102 | US | 7 | ALWAYS | AUTO | - |
| Pixel Representation | 0028,0103 | US | 0x0000 | ALWAYS | AUTO | - |
| Pixel Data | 7FE0,0010 | O W/ OB | | ALWAYS | AUTO | - |

### Table 375: SOP Common Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Specific Character Set | 0008,0005 | CS | | ANAP | COPY | Required if expanded/replacement character set used |

| | | | | | | |
|---|---|---|---|---|---|---|
| SOP Class UID | 0008,0016 | UI | | ALWAYS | AUTO | - |
| SOP Instance UID | 0008,0018 | UI | | ALWAYS | AUTO | - |
| Instance Number | 0020,0013 | IS | | ANAP | AUTO | - |

#### 13.1.1.6. X-Ray Angiographic Image Storage SOP Class

**Table 376: IOD of Created X-Ray Angiographic Image Storage SOP Class Instances**

| Information Entity | Module | Presence Of Module |
|---|---|---|
| Patient | Patient Module | ALWAYS |
| Study | General Study Module | ALWAYS |
| Study | Patient Study Module | ALWAYS |
| Series | General Series Module | ALWAYS |
| Equipment | General Equipment Module | ALWAYS |
| Image | General Image Module | ALWAYS |
| Image | Image Pixel Module | ALWAYS |
| Image | X-Ray Image Module | ALWAYS |
| Image | X-Ray Acquisition Module | ALWAYS |
| Image | XA Positioner Module | ALWAYS |
| Image | SOP Common Module | ALWAYS |
| | Extended Dicom and Private attributes | ALWAYS |

**Table 377: Patient Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Patient's Name | 0010,0010 | PN | | VNAP | COPY | - |
| Patient ID | 0010,0020 | LO | | VNAP | COPY | - |
| Patient's Birth Date | 0010,0030 | DA | | VNAP | COPY | - |
| Patient's Birth Time | 0010,0032 | TM | | ALWAYS | AUTO | - |
| Patient's Sex | 0010,0040 | CS | F, M, O | VNAP | COPY | - |

**Table 378: General Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Study Date | 0008,0020 | DA | | ALWAYS | COPY | - |
| Study Time | 0008,0030 | TM | | VNAP | COPY | - |
| Accession Number | 0008,0050 | SH | | VNAP | COPY | - |
| Referring Physician's Name | 0008,0090 | PN | | VNAP | COPY | - |
| Study Description | 0008,1030 | LO | | VNAP | COPY | - |
| Study Instance UID | 0020,000D | UI | | ALWAYS | COPY | - |
| Study ID | 0020,0010 | SH | | ALWAYS | COPY | - |

**Table 379: Patient Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Patient's Weight | 0010,1030 | DS | | VNAP | COPY | - |

**Table 380: General Series Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Series Date | 0008,0021 | DA | | ALWAYS | AUTO | - |
| Series Time | 0008,0031 | TM | | ALWAYS | AUTO | - |
| Modality | 0008,0060 | CS | | ALWAYS | COPY | - |
| Series Description | 0008,103E | LO | original | ALWAYS | AUTO | - |
| Protocol Name | 0018,1030 | LO | | ALWAYS | AUTO | - |
| Series Instance UID | 0020,000E | UI | | ALWAYS | AUTO | - |
| Series Number | 0020,0011 | IS | | ALWAYS | AUTO | - |
| Performed Procedure Step Start Date | 0040,0244 | DA | | ALWAYS | AUTO | - |
| Performed Procedure Step Start Time | 0040,0245 | TM | | ALWAYS | AUTO | - |
| Performed Procedure Step ID | 0040,0253 | SH | | ALWAYS | AUTO | - |
| Performed Procedure Step Description | 0040,0254 | LO | | VNAP | AUTO | - |

**Table 381: General Equipment Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Manufacturer | 0008,0070 | LO | Philips Medical Systems | ALWAYS | AUTO | - |
| Institution Name | 0008,0080 | LO | | ALWAYS | AUTO | - |
| Manufacturer's Model Name | 0008,1090 | LO | ViewForum | ALWAYS | AUTO | - |
| Software Version(s) | 0018,1020 | LO | Value 1: ViewForum 6.1", "PMS5.2 MIMIT EVIIMDictionary | ALWAYS | AUTO | - |

**Table 382: General Image Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Acquisition Date | 0008,0022 | DA | | ALWAYS | COPY | - |
| Content Date | 0008,0023 | DA | | ALWAYS | COPY | - |
| Acquisition Time | 0008,0032 | TM | | ALWAYS | AUTO | - |
| Content Time | 0008,0033 | TM | | ALWAYS | COPY | - |
| Instance Number | 0020,0013 | IS | | ALWAYS | AUTO | - |
| Patient Orientation | 0020,0020 | CS | | ALWAYS | AUTO, CONFIG | |

**Table 383: Image Pixel Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Rows | 0028,0010 | US | | ALWAYS | AUTO | - |
| Columns | 0028,0011 | US | | ALWAYS | AUTO | - |
| Pixel Data | 7FE0,0010 | O W/ OB | | ALWAYS | AUTO | - |

**Table 384: X-Ray Image Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Image Type | 0008,0008 | CS | Value 1: DERIVED, SINGLE A, STORE MONITOR, Value 2: SECONDARY, Value 3: SINGLE PLANE | ALWAYS | AUTO | - |
| Samples per Pixel | 0028,0002 | US | | ALWAYS | AUTO | - |
| Photometric Interpretation | 0028,0004 | CS | MONOCHROME1, MONOCHROME2 | ALWAYS | AUTO | - |
| Bits Allocated | 0028,0100 | US | 8 | ALWAYS | AUTO | - |
| Bits Stored | 0028,0101 | US | 8 | ALWAYS | AUTO | - |
| High Bit | 0028,0102 | US | 7 | ALWAYS | AUTO | - |
| Pixel Representation | 0028,0103 | US | | ALWAYS | AUTO | - |
| Pixel Intensity Relationship | 0028,1040 | CS | DISP | ALWAYS | AUTO | - |

**Table 385: X-Ray Acquisition Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| KVP | 0018,0060 | DS | | VNAP | AUTO | - |
| Exposure Time | 0018,1150 | IS | | ANAP | AUTO | - |
| X-ray Tube Current | 0018,1151 | IS | | ANAP | AUTO | - |
| Exposure | 0018,1152 | IS | | ANAP | AUTO | - |
| Radiation Setting | 0018,1155 | CS | GR | ALWAYS | AUTO | - |

**Table 386: XA Positioner Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Positioner Primary Angle | 0018,1510 | DS | | EMPTY | AUTO | |
| Positioner Secondary Angle | 0018,1511 | DS | | EMPTY | AUTO | |

**Table 387: SOP Common Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Specific Character Set | 0008,0005 | CS | | ANAP | AUTO | Required if expanded/replacement character set used |
| SOP Class UID | 0008,0016 | UI | 1.2.840.10008.5.1.4.1.1.12.1 | ALWAYS | AUTO | - |
| SOP Instance UID | 0008,0018 | UI | | ALWAYS | AUTO | - |

### 13.1.1.7. X-Ray Radiofluoroscopic Image Storage SOP Class

**Table 388: IOD of Created X-Ray Radiofluoroscopic Image Storage SOP Class Instances**

| Information Entity | Module | Presence Of Module |
|---|---|---|
| Patient | Patient Module | ALWAYS |
| Study | General Study Module | ALWAYS |
| Study | Patient Study Module | ALWAYS |
| Series | General Series Module | ALWAYS |
| Equipment | General Equipment Module | ALWAYS |

| | | |
|---|---|---|
| Image | General Image Module | ALWAYS |
| Image | Image Pixel Module | ALWAYS |
| Image | X-Ray Image Module | ALWAYS |
| Image | X-Ray Acquisition Module | ALWAYS |
| Image | SOP Common Module | ALWAYS |
| | Extended Dicom and Private attributes | ALWAYS |

**Table 389: Patient Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Patient's Name | 0010,0010 | PN | | VNAP | COPY | - |
| Patient ID | 0010,0020 | LO | | VNAP | COPY | - |
| Patient's Birth Date | 0010,0030 | DA | | VNAP | COPY | - |
| Patient's Birth Time | 0010,0032 | TM | | ALWAYS | AUTO | - |
| Patient's Sex | 0010,0040 | CS | F, M, O | VNAP | COPY | - |

**Table 390: General Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Study Date | 0008,0020 | DA | | ALWAYS | COPY | - |
| Study Time | 0008,0030 | TM | | ALWAYS | COPY | - |
| Accession Number | 0008,0050 | SH | | VNAP | COPY | - |
| Referring Physician's Name | 0008,0090 | PN | | VNAP | COPY | - |
| Study Description | 0008,1030 | LO | | VNAP | COPY | - |
| Name of Physician(s) Reading Study | 0008,1060 | PN | | VNAP | COPY | - |
| Study Instance UID | 0020,000D | UI | | ALWAYS | COPY | - |
| Study ID | 0020,0010 | SH | | VNAP | COPY | - |

**Table 391: Patient Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Patient's Weight | 0010,1030 | DS | | VNAP | COPY | - |

**Table 392: General Series Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Series Date | 0008,0021 | DA | | ALWAYS | AUTO | - |
| Series Time | 0008,0031 | TM | | ALWAYS | AUTO | - |
| Modality | 0008,0060 | CS | | ALWAYS | COPY | - |
| Series Description | 0008,103E | LO | original | ALWAYS | AUTO | - |
| Protocol Name | 0018,1030 | LO | | ALWAYS | AUTO | - |
| Series Instance UID | 0020,000E | UI | | ALWAYS | AUTO | - |
| Series Number | 0020,0011 | IS | | VNAP | AUTO | - |
| Performed Procedure Step Start Date | 0040,0244 | DA | | ANAPEV | AUTO | - |
| Performed Procedure Step Start Time | 0040,0245 | TM | | ANAP | AUTO | - |
| Performed Procedure Step ID | 0040,0253 | SH | | ANAP | COPY | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| Performed Procedure Step Description | 0040,0254 | LO | | VNAP | AUTO | - |

**Table 393: General Equipment Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Manufacturer | 0008,0070 | LO | Philips Medical Systems | VNAP | AUTO | - |
| Institution Name | 0008,0080 | LO | | ALWAYS | AUTO | - |
| Manufacturer's Model Name | 0008,1090 | LO | ViewForum | ALWAYS | AUTO | - |
| Software Version(s) | 0018,1020 | LO | Value 1: ViewForum 6.1", "PMS5.2 MIMIT EVIIMDictionary | ALWAYS | AUTO | - |

**Table 394: General Image Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Acquisition Date | 0008,0022 | DA | | ALWAYS | COPY | - |
| Content Date | 0008,0023 | DA | | ALWAYS | COPY | - |
| Acquisition Time | 0008,0032 | TM | | ALWAYS | AUTO | - |
| Content Time | 0008,0033 | TM | | ALWAYS | AUTO | - |
| Instance Number | 0020,0013 | IS | | ALWAYS | AUTO | - |
| Patient Orientation | 0020,0020 | CS | | ALWAYS | AUTO, CONFIG | |

**Table 395: Image Pixel Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Rows | 0028,0010 | US | | ALWAYS | AUTO | - |
| Columns | 0028,0011 | US | | ALWAYS | AUTO | - |
| Pixel Data | 7FE0,0010 | O W/ OB | | ALWAYS | AUTO | - |

**Table 396: X-Ray Image Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Image Type | 0008,0008 | CS | Value 1: ORIGINAL, Value 2: PRIMARY, Value 3: SINGLE PLANE | ALWAYS | AUTO | - |
| Samples per Pixel | 0028,0002 | US | 1 | ALWAYS | AUTO | - |
| Photometric Interpretation | 0028,0004 | CS | MONOCHROME2 | ALWAYS | AUTO | - |
| Bits Allocated | 0028,0100 | US | 16 | ALWAYS | AUTO | - |
| Bits Stored | 0028,0101 | US | 12 | ALWAYS | AUTO | - |
| High Bit | 0028,0102 | US | 11 | ALWAYS | AUTO | - |
| Pixel Representation | 0028,0103 | US | 0 | ALWAYS | AUTO | - |
| Pixel Intensity Relationship | 0028,1040 | CS | DISP | ALWAYS | AUTO | - |

**Table 397: X-Ray Acquisition Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| KVP | 0018,0060 | DS | | VNAP | AUTO | - |
| Exposure Time | 0018,1150 | IS | | ANAP | AUTO | - |
| X-ray Tube Current | 0018,1151 | IS | | ANAP | AUTO | - |
| Exposure | 0018,1152 | IS | | ANAP | AUTO | - |
| Radiation Setting | 0018,1155 | CS | GR | ALWAYS | AUTO | - |

**Table 398: SOP Common Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Specific Character Set | 0008,0005 | CS | | ANAP | AUTO | Required if expanded/replacement character set used |
| SOP Class UID | 0008,0016 | UI | 1.2.840.10008.5.1.4.1.1.12.2 | ALWAYS | AUTO | - |
| SOP Instance UID | 0008,0018 | UI | | ALWAYS | AUTO | - |

### 13.1.1.8. MR Image Storage SOP Class

**Table 399: IOD of Created MR Image Storage SOP Class Instances**

| Information Entity | Module | Presence Of Module |
|---|---|---|
| Patient | Patient Module | ALWAYS |
| Study | General Study Module | ALWAYS |
| Study | Patient Study Module | ALWAYS |
| Series | General Series Module | ALWAYS |
| Frame of Reference | Frame of Reference Module | ALWAYS |
| Equipment | General Equipment Module | ALWAYS |
| Image | General Image Module | ALWAYS |
| Image | Image Plane Module | ALWAYS |
| Image | Image Pixel Module | ALWAYS |
| Image | MR Image Module | ALWAYS |
| Image | VOI LUT Module | ALWAYS |
| Image | SOP Common Module | ALWAYS |
| | Extended Dicom and Private attributes | ALWAYS |

**Table 400: Patient Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Patient's Name | 0010,0010 | PN | | VNAP | COPY | - |
| Patient ID | 0010,0020 | LO | | VNAP | COPY | - |
| Issuer of Patient ID | 0010,0021 | LO | | ANAP | COPY | - |
| Patient's Birth Date | 0010,0030 | DA | | VNAP | COPY | - |
| Patient's Birth Time | 0010,0032 | TM | | ANAP | AUTO | - |
| Patient's Sex | 0010,0040 | CS | F, M, O | VNAP | COPY | - |

**Table 401: General Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Study Date | 0008,0020 | DA | | VNAP | COPY | - |
| Study Time | 0008,0030 | TM | | VNAP | COPY | - |
| Accession Number | 0008,0050 | SH | | VNAP | COPY | - |
| Referring Physician's Name | 0008,0090 | PN | | VNAP | COPY | - |
| Study Description | 0008,1030 | LO | | ANAP | COPY | - |
| Name of Physician(s) Reading Study | 0008,1060 | PN | | ANAP | COPY | - |
| Study Instance UID | 0020,000D | UI | | ALWAYS | AUTO | - |
| Study ID | 0020,0010 | SH | | VNAP | AUTO | - |

**Table 402: Patient Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Admitting Diagnoses Description | 0008,1080 | LO | | ANAP | COPY | - |

**Table 403: General Series Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Series Date | 0008,0021 | DA | | ANAP | AUTO | - |
| Series Time | 0008,0031 | TM | | ANAP | AUTO | - |
| Modality | 0008,0060 | CS | | ALWAYS | COPY | - |
| Series Description | 0008,103E | LO | original | ANAP | AUTO | - |
| Protocol Name | 0018,1030 | LO | | ANAP | AUTO | - |
| Patient Position | 0018,5100 | CS | | VNAP | COPY | - |
| Series Instance UID | 0020,000E | UI | | ALWAYS | COPY | - |
| Series Number | 0020,0011 | IS | | VNAP | AUTO | - |
| Performed Procedure Step Start Date | 0040,0244 | DA | | ANAP | COPY | - |
| Performed Procedure Step Start Time | 0040,0245 | TM | | ANAP | COPY | - |
| Performed Procedure Step ID | 0040,0253 | SH | | ANAP | COPY | - |
| Performed Procedure Step Description | 0040,0254 | LO | | ANAP | COPY | - |

**Table 404: Frame of Reference Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Frame of Reference UID | 0020,0052 | UI | | ALWAYS | AUTO | - |
| Position Reference Indicator | 0020,1040 | LO | | VNAP | AUTO | - |

**Table 405: General Equipment Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Manufacturer | 0008,0070 | LO | Philips Medical Systems | VNAP | AUTO | - |
| Institution Name | 0008,0080 | LO | | ANAP | AUTO | - |
| Manufacturer's Model Name | 0008,1090 | LO | | ANAP | AUTO | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| Software Version(s) | 0018,1020 | LO | Value 1: ViewForum 6.1", "PMS5.2 MIMIT EVIIMDictionary | ANAP | AUTO | - |

**Table 406: General Image Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Image Type | 0008,0008 | CS | | ANAP | COPY | - |
| Content Date | 0008,0023 | DA | | VNAP | COPY | - |
| Content Time | 0008,0033 | TM | | VNAP | COPY | - |
| Instance Number | 0020,0013 | IS | | VNAP | AUTO | - |

**Table 407: Image Plane Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Slice Thickness | 0018,0050 | DS | | VNAP | AUTO | - |
| Image Position (Patient) | 0020,0032 | DS | | ALWAYS | AUTO | - |
| Image Orientation (Patient) | 0020,0037 | DS | | ALWAYS | AUTO | - |
| Pixel Spacing | 0028,0030 | DS | | ALWAYS | AUTO | - |

**Table 408: Image Pixel Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Samples per Pixel | 0028,0002 | US | | ALWAYS | AUTO | - |
| Rows | 0028,0010 | US | | ALWAYS | AUTO | - |
| Columns | 0028,0011 | US | | ALWAYS | AUTO | - |
| Bits Allocated | 0028,0100 | US | 16 | ALWAYS | AUTO | - |
| Bits Stored | 0028,0101 | US | 8 | ALWAYS | AUTO | - |
| High Bit | 0028,0102 | US | 7 | ALWAYS | AUTO | - |
| Pixel Representation | 0028,0103 | US | 0x0000 | ALWAYS | AUTO | - |
| Pixel Data | 7FE0,0010 | O W/ OB | | ALWAYS | AUTO | - |

**Table 409: MR Image Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Image Type | 0008,0008 | CS | Value 1: ORIGINAL, Value 2: PRIMARY | ALWAYS | AUTO | - |
| Scanning Sequence | 0018,0020 | CS | GR | ALWAYS | AUTO | - |
| Sequence Variant | 0018,0021 | CS | | ALWAYS | AUTO | - |
| Scan Options | 0018,0022 | CS | | VNAP | AUTO | - |
| MR Acquisition Type | 0018,0023 | CS | | VNAP | AUTO | - |
| Echo Time | 0018,0081 | DS | | VNAP | AUTO | - |
| Echo Train Length | 0018,0091 | IS | | VNAP | AUTO | - |
| Samples per Pixel | 0028,0002 | US | | ALWAYS | AUTO | - |
| Photometric Interpretation | 0028,0004 | CS | | ALWAYS | AUTO | - |
| Bits Allocated | 0028,0100 | US | | ALWAYS | AUTO | - |

**Table 410: VOI LUT Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Window Center | 0028,1050 | DS | | ANAP | AUTO | - |
| Window Width | 0028,1051 | DS | | ANAP | AUTO | - |

**Table 411: SOP Common Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Specific Character Set | 0008,0005 | CS | | ANAP | AUTO | Required if expanded/replacement character set used |
| SOP Class UID | 0008,0016 | UI | 1.2.840.10008.5.1.4.1.1.4 | ALWAYS | AUTO | - |
| SOP Instance UID | 0008,0018 | UI | | ALWAYS | AUTO | - |
| Instance Number | 0020,0013 | IS | | ANAP | AUTO | - |

## 13.1.2. Usage of Attributes from Received IOD

The following table lists the functionality supported by this application.

**Table 412: Functionalities**

| Functionality | Type1 | Optional | Private |
|---|---|---|---|
| IVE | X | X | |

### 13.1.2.1. Usage of the Functionality IVE

The following table lists the supported SOP Classes which can be used by this application.

**Table 413: Supported SOP Classes for functionality IVE**

| SOP Class name | SOP Class UID |
|---|---|
| Philips Private ViewForum 3D Volume Object New Storage | 1.3.46.670589.5.0.2.1 |
| Philips Private ViewForum 3D Volume New Storage | 1.3.46.670589.5.0.1.1 |
| Philips Private ViewForum MR Cardio New Storage | 1.3.46.670589.5.0.8.1 |
| CT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.2 |
| Philips Private ViewForum CT Synthetic Image Storage | 1.3.46.670589.5.0.9 |
| Philips Private ViewForum CX Synthetic Image Storage | 1.3.46.670589.5.0.12 |
| Digital Mammography X-Ray Image Storage - Pres. SOP | 1.2.840.10008.5.1.4.1.1.1.2 |
| Philips Private ViewForum MR Cardio Analysis New Storage | 1.3.46.670589.5.0.11.1 |
| Philips Private EasyVision MR Cardio Storage | 1.3.46.670589.5.0.8 |
| Philips Private ViewForum MR Synthetic Image Storage | 1.3.46.670589.5.0.10 |
| Philips Private ViewForum Perfusion Storage | 1.3.46.670589.5.0.13 |
| Philips Private ViewForum Perfusion Analysis Storage | 1.3.46.670589.5.0.14 |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 |
| Grayscale Softcopy Presentation State Storage SOP Class | 1.2.840.10008.5.1.4.1.1.11.1 |
| Philips Private ViewForum Surface New Storage | 1.3.46.670589.5.0.3.1 |
| X-Ray Radiofluoroscopic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.2 |

| | |
|---|---|
| Philips Private Reconstructed X-ray Storage | 1.3.46.670589.2.4.1.1 |

### 13.1.3. Attribute Mapping

Not applicable

### 13.1.4. Coerced/Modified fields

If not available at import then ViewForum will create the additional attributes as listed in the table below.

**Table 414: Additional Attributes for Image Import.**

| Attribute | Tag | VR | General Value |
|---|---|---|---|
| Performed Procedure Step Start Date | 0040,0244 | DA | Copied from (0008, 0020) Study Date. |
| Performed Procedure Step Start Time | 0040,0245 | TM | Copied from (0008, 0030) Study Time. |
| Performed Procedure Step ID | 0040,0253 | SH | Copied from (0020, 0010) Study ID. |
| Performed Procedure Step Description | 0040,0254 | LO | Copied from (0008, 1030) Study Description. |

## 13.2. Data Dictionary of Private Attributes

Not applicable.

## 13.3. Coded Terminology and Templates

Not applicable.

### 13.3.1. Context Groups

Not applicable.

### 13.3.2. Template Specifications

Not applicable.

### 13.3.3. Private code definitions

Not applicable.

## 13.4. Grayscale Image consistency

Not applicable.

## 13.5. Standard Extended/Specialized/Private SOPs

Not applicable.

**Table 415: List of created SOP Classes**

| SOP Class Name | SOP Class UID |
|---|---|
| Computed Radiography Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.1 |

| | |
|---|---|
| CT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.2 |
| Grayscale Softcopy Presentation State Storage SOP Class | 1.2.840.10008.5.1.4.1.1.11.1 |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 |
| X-Ray Angiographic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.1 |
| X-Ray Radiofluoroscopic Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.12.2 |
| MR Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.4 |
| Philips Private ViewForum 3D Volume Object New Storage | 1.3.46.670589.5.0.2.1 |
| Philips Private ViewForum 3D Volume New Storage | 1.3.46.670589.5.0.1.1 |

## 13.5.1. Standard Extended/Specialized/Private SOP Instance

### 13.5.1.1. Computed Radiography Image Storage SOP Class

**Table 416: Extended DICOM and private attributes for Computed Radiography Image Storage SOP Class Instances**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Image And Fluoroscopy Area Dose Product | 0018,115E | DS | | ANAP | AUTO | - |
| Grid | 0018,1166 | DS | | ANAP | COPY | - |
| Processing Function | 0018,5020 | IS | | ANAP | AUTO | - |
| > Samples per Pixel | 0028,0002 | AT | | ANAP | AUTO | - |
| > Photometric Interpretation | 0028,0004 | CS | | ANAP | AUTO | - |
| > Rows | 0028,0010 | SH | | ANAP | AUTO | - |
| >Columns | 0028,0011 | LO | | ANAP | AUTO | - |
| > Bits Allocated | 0028,0100 | US | | ANAP | AUTO | - |
| >Bits Stored | 0028,0101 | US | | ANAP | AUTO | - |
| > High Bit | 0028,0102 | US | | ANAP | AUTO | - |
| >Pixel Representation | 0028,0103 | US | | ANAP | AUTO | - |
| >Pixel Data | 7FE0,0010 | US | | ANAP | AUTO | - |

### 13.5.1.2. CT Image Storage SOP Class

**Table 417: Extended DICOM and private attributes for CT Image Storage SOP Class Instances**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Performed Station Name | 0040,0242 | SH | | VNAP | COPY | - |
| Performed Procedure Type Description | 0040,0255 | LO | | VNAP | COPY | - |
| Medical Alerts | 0010,2000 | LO | | ANAP | COPY | - |
| Allergies | 0010,2110 | LO | | ANAP | COPY | - |
| Pregnancy Status | 0010,21C0 | US | | ANAP | COPY | - |
| Requesting Physician | 0032,1032 | PN | | ANAP | COPY | - |
| Special Needs | 0038,0050 | LO | | ANAP | COPY | - |
| Patient State | 0038,0500 | LO | | ANAP | COPY | - |

#### 13.5.1.3. Grayscale Softcopy Presentation State Storage SOP Class

**Table 418: Extended DICOM and private attributes for Grayscale Softcopy Presentation State Storage SOP Class Instances**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Distance Source to Detector | 0018,1110 | DS | | ANAP | AUTO | - |
| Image and Fluoroscopy Area Dose Product | 0018,115E | DS | | ANAP | AUTO | - |
| Performed Station Name | 0040,0242 | SH | | VNAP | COPY | - |
| Performed Procedure Type Description | 0040,0255 | LO | | VNAP | COPY | - |
| Entrance Dose | 0040,0302 | US | | ANAP | AUTO | - |
| Comments on Radiation Dose | 0040,0310 | ST | | ANAP | AUTO | - |

#### 13.5.1.4. Secondary Capture Image Storage SOP Class

**Table 419: Extended DICOM and private attributes for Secondary Capture Image Storage SOP Class Instances**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Pregnancy Status | 0010,21C0 | US | | ANAP | AUTO | - |
| Performed Station AE Title | 0040,0241 | AE | | ANAP | AUTO | - |
| Performed Station Name | 0040,0242 | SH | | ANAP | COPY | - |
| Performed Procedure Step End Date | 0040,0250 | DA | | ANAP | AUTO | - |
| Performed Procedure Step End Time | 0040,0251 | TM | | ANAP | AUTO | - |
| Performed Procedure Type Description | 0040,0255 | LO | | ANAP | COPY | - |
| Film Consumption Sequence | 0040,0321 | SQ | | ANAP | COPY | - |

#### 13.5.1.5. X-Ray Angiographic Image Storage SOP Class

**Table 420: Extended DICOM and private attributes for X-Ray Angiographic Image Storage SOP Class Instances**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Performed Station Name | 0040,0242 | SH | | VNAP | AUTO | - |
| Performed Procedure Type Description | 0040,0255 | LO | | VNAP | AUTO | - |

#### 13.5.1.6. X-Ray Radiofluoroscopic Image Storage SOP Class

**Table 421: Extended DICOM and private attributes for X-Ray Radiofluoroscopic Image Storage SOP Class Instances**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Performed Station Name | 0040,0242 | SH | | ALWAYS | AUTO | - |
| Performed Procedure Type Description | 0040,0255 | LO | | ALWAYS | AUTO | - |

#### 13.5.1.7. MR Image Storage SOP Class

**Table 422: Extended DICOM and private attributes for MR Image Storage SOP Class Instances**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Rescale Intercept | 0028,1052 | DS | | ANAP | AUTO | - |
| Rescale Slope | 0028,1053 | DS | | ANAP | AUTO | - |
| Rescale Type | 0028,1054 | LO | | ANAP | AUTO | - |
| Performed Station Name | 0040,0242 | SH | | ANAP | COPY | - |
| Performed Procedure Type Description | 0040,0255 | LO | | ANAP | COPY | - |

## 13.6. Private Transfer Syntaxes

Not applicable.

# 14. Annexes of application "PDF_REPORT"

## 14.1. IOD Contents

### 14.1.1. Created SOP Instance

This section specifies each IOD created by this application.

This section specifies each IOD created (including private IOD's). It should specify the attribute name, tag, VR, and value. The value should specify the range and source (e.g. user input, Modality Worklist, automatically generated, etc.). For content items in templates, the range and source of the concept name and concept values should be specified. Whether the value is always present or not shall be specified.

Abbreviations used in the IOD tables for the column "Presence of Module" are:

| | |
|---|---|
| ALWAYS | The module is always present |
| CONDITIONAL | The module is used under specified condition |

Abbreviations used in the Module table for the column "Presence of Value" are:

| | |
|---|---|
| ALWAYS | The attribute is always present with a value |
| EMPTY | The attribute is always present without any value (attribute sent zero length) |
| VNAP | The attribute is always present and its Value is Not Always Present (attribute sent zero length if no value is present) |
| ANAP | The attribute is present under specified condition – if present then it will always have a value |

The abbreviations used in the Module table for the column "Source" are:

| | |
|---|---|
| AUTO | The attribute value is generated automatically |
| CONFIG | The attribute value source is a configurable parameter |
| COPY | The attribute value source is another SOP instance |
| FIXED | The attribute value is hard-coded in the application |
| IMPLICIT | The attribute value source is a user-implicit setting |
| MPPS | The attribute value is the same as that use for Modality Performed Procedure Step |
| MWL | The attribute value source is a Modality Worklist |
| USER | The attribute value source is explicit user input |

#### 14.1.1.1. List of created SOP Classes

**Table 423: List of created SOP Classes**

| SOP Class Name | SOP Class UID |
|---|---|
| Encapsulated PDF Storage SOP Class | 1.2.840.10008.5.1.4.1.1.104.1 |

#### 14.1.1.2. Encapsulated PDF Storage SOP Class

**Table 424: IOD of Created Encapsulated PDF Storage SOP Class Instances**

| Information Entity | Module | Presence Of Module |
|---|---|---|
| Patient | Patient Module | ALWAYS |
| Study | General Study Module | ALWAYS |
| Study | Patient Study Module | CONDITIONAL |
| Series | Encapsulated Document Series Module | ALWAYS |
| Equipment | General Equipment Module | ALWAYS |
| Equipment | SC Equipment Module | ALWAYS |
| Image | Encapsulated Document Module | ALWAYS |

| | | |
|---|---|---|
| Image | SOP Common Module | ALWAYS |

**Table 425: Patient Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Patient's Name | 0010,0010 | PN | | VNAP | COPY | - |
| Patient ID | 0010,0020 | LO | | VNAP | COPY | - |
| Issuer of Patient ID | 0010,0021 | LO | | ANAP | AUTO | - |
| Patient's Birth Date | 0010,0030 | DA | | VNAP | COPY | - |
| Patient's Birth Time | 0010,0032 | TM | | ANAP | COPY | - |
| Patient's Sex | 0010,0040 | CS | F, M, O | VNAP | COPY | - |
| Other Patient Names | 0010,1001 | PN | | ANAP | COPY | - |
| Ethnic Group | 0010,2160 | SH | | ANAP | COPY | - |
| Patient Comments | 0010,4000 | LT | | ANAP | | |

**Table 426: General Study Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Study Date | 0008,0020 | DA | | VNAP | AUTO | - |
| Study Time | 0008,0030 | TM | | VNAP | AUTO | - |
| Accession Number | 0008,0050 | SH | | VNAP | AUTO | EMPTY |
| Referring Physician's Name | 0008,0090 | PN | | VNAP | COPY | The report output from CAAS2000 for IntelliSpace Cardiovascular contains "Reported Physician" information which is taken from the value of this attribute. |
| Study Instance UID | 0020,000D | UI | | ALWAYS | COPY | - |
| Study ID | 0020,0010 | SH | | VNAP | COPY | - |

**Table 427: Patient Study Module**

| | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Admitting Diagnoses Description | 0008,1080 | LO | | ANAP | COPY | - |

**Table 428: Encapsulated Document Series Module**

| | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Modality | 0008,0060 | CS | | ALWAYS | AUTO | - |
| Series Instance UID | 0020,000E | UI | | ALWAYS | AUTO | - |
| Series Number | 0020,0011 | IS | | ALWAYS | AUTO | - |

**Table 429: General Equipment Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Manufacturer | 0008,0070 | LO | Philips Medical Systems | VNAP | AUTO | - |

**Table 430: SC Equipment Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Modality | 0008,0060 | CS | | ANAP | AUTO | - |
| Conversion Type | 0008,0064 | CS | WSD | ALWAYS | AUTO | - |

**Table 431: Encapsulated Document Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Content Date | 0008,0023 | DA | | VNAP | AUTO | - |
| Acquisition Datetime | 0008,002A | DT | | VNAP | AUTO | - |
| Content Time | 0008,0033 | TM | | VNAP | AUTO | - |
| Instance Number | 0020,0013 | IS | | ALWAYS | AUTO | - |
| Burned In Annotation | 0028,0301 | CS | NO | ALWAYS | AUTO | - |
| Concept Name Code Sequence | 0040,A043 | SQ | | VNAP | AUTO | - |
| Document Title | 0042,0010 | ST | | VNAP | AUTO | - |
| Encapsulated Document | 0042,0011 | OB | | ALWAYS | AUTO | - |
| MIME Type of Encapsulated Document | 0042,0012 | LO | application/pdf | ALWAYS | AUTO | - |

**Table 432: SOP Common Module**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Specific Character Set | 0008,0005 | CS | ISO_IR 100 | ANAP | COPY | |
| SOP Class UID | 0008,0016 | UI | 1.2.840.10008.5.1.4.1.1.104.1 | ALWAYS | AUTO | - |
| SOP Instance UID | 0008,0018 | UI | | ALWAYS | AUTO | - |
| Instance Number | 0020,0013 | IS | | ANAP | AUTO | |

### 14.1.2. Usage of Attributes from Received IOD

Not applicable.

### 14.1.3. Attribute Mapping

Not applicable.

### 14.1.4. Coerced/Modified fields

Not applicable.

## 14.2. Data Dictionary of Private Attributes

Not applicable.

## 14.3. Coded Terminology and Templates

Not applicable.

### 14.3.1. Context Groups

Not applicable.

### 14.3.2. Template Specifications

Not applicable.

### 14.3.3. Private code definitions

Not applicable.

## 14.4. Grayscale Image consistency

Not applicable.

## 14.5. Standard Extended/Specialized/Private SOPs

#### 14.5.1.1. Encapsulated PDF Storage SOP Class

**Table 433: Extended DICOM and private attributes for Encapsulated PDF Storage SOP Class Instances**

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---|---|---|---|---|---|---|
| Performing Physician Name | 0008,1050 | PN | | ANAP | AUTO | - |
| Referenced SOP Class UID | 0008,1150 | UI | | ANAP | AUTO | - |
| Referenced SOP Instance UID | 0008,1155 | UI | | ANAP | AUTO | - |
| Protocol Name | 0018,1030 | LO | | ANAP | AUTO | - |

## 14.6. Private Transfer Syntaxes

Not applicable.

# 15. Annexes of application "EPMED"

## 15.1. IOD Contents

### 15.1.1. Created SOP Instance

Not applicable.

This section specifies each IOD created (including private IOD's). It should specify the attribute name, tag, VR, and value. The value should specify the range and source (e.g. user input, Modality Worklist, automatically generated, etc.). For content items in templates, the range and source of the concept name and concept values should be specified. Whether the value is always present or not shall be specified.

Abbreviations used in the IOD tables for the column "Presence of Module" are:

| | |
|---|---|
| ALWAYS | The module is always present |
| CONDITIONAL | The module is used under specified condition |

Abbreviations used in the Module table for the column "Presence of Value" are:

| | |
|---|---|
| ALWAYS | The attribute is always present with a value |
| EMPTY | The attribute is always present without any value (attribute sent zero length) |
| VNAP | The attribute is always present and its Value is Not Always Present (attribute sent zero length if no value is present) |
| ANAP | The attribute is present under specified condition – if present then it will always have a value |
| ANAPCV | The attribute is present under specified condition – if present then its Value is Not Always Present (attribute sent zero length if condition applies and no value is present) |
| ANAPEV | The attribute is present under specified condition – if present then it will not have any value |

The abbreviations used in the Module table for the column "Source" are:

| | |
|---|---|
| AUTO | The attribute value is generated automatically |
| CONFIG | The attribute value source is a configurable parameter |
| COPY | The attribute value source is another SOP instance |
| FIXED | The attribute value is hard-coded in the application |
| IMPLICIT | The attribute value source is a user-implicit setting |
| MPPS | The attribute value is the same as that use for Modality Performed Procedure Step |
| MWL | The attribute value source is a Modality Worklist |
| USER | The attribute value source is explicit user input |

#### 15.1.1.1. List of created SOP Classes

**Table 434: List of created SOP Classes**

| SOP Class Name | SOP Class UID |
|---|---|
| Raw Data Storage SOP Class | 1.2.840.10008.5.1.4.1.1.66 |

### 15.1.2. Usage of Attributes from Received IOD

Not applicable.

### 15.1.3. Attribute Mapping

Not applicable.

#### 15.1.4. Coerced/Modified fields

Not applicable.

## 15.2. Data Dictionary of Private Attributes

Not applicable.

## 15.3. Coded Terminology and Templates

Not applicable.

#### 15.3.1. Context Groups

Not applicable.

#### 15.3.2. Template Specifications

Not applicable.

#### 15.3.3. Private code definitions

Not applicable.

## 15.4. Grayscale Image consistency

Not applicable.

## 15.5. Standard Extended/Specialized/Private SOPs

Not applicable.

## 15.6. Private Transfer Syntaxes

Not applicable.